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SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 7 1939

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WAR NOTICES

Petrol Rationing

As a result of further representations made by the British Medical Association to the Petroleum Department all Divisional Petroleum Officers have been reminded of the necessity of urgently reviewing the essential requirements of individual medical practitioners. There is no foundation for the suggestion that the basic supplementary ration already issued is all which the Divisional Petroleum Officers have power to grant. Every effort is being made to secure a considerable increase in the basic supplementary ration in order that the cases calling for special consideration by the Divisional Petroleum Officers, in consultation with the Association's advisers, may be reduced to manageable proportions. Any medical practitioner who needs for professional purposes more petrol than he has already received should make a further application to the Divisional Petroleum Officer, giving exact particulars of his essential requirements. He should *not* address applications or correspondence to the Association's advisory officer unless he has been invited to do so.

It is reported that a very large number of medical practitioners have failed to send their registration books with their original applications. It therefore appears necessary to stress the importance of medical applicants complying strictly with the procedure laid down. It must be emphasized also that in present circumstances medical practitioners, like other car users, should exercise the utmost economy possible in their consumption of petrol. An unreasonable attitude on the part of a few applicants may well prejudice the success not only of their own applications but also of the legitimate claims of large numbers of their colleagues.

First-aid Posts

the time this paragraph appears a deputation from the iation, consisting of representative practitioners and al officers of health, will have discussed with the Minister ealth the whole question of the employment and remuneration of medical practitioners at first-aid posts. The matter being pressed with vigour and expedition.

Unaccompanied Children

Minister of Health has informed the Association that unable to accept the suggestion that the unaccompanied children's scheme should be extended to cover accompanied children and others officially evacuated. In his view existing facilities, augmented as may prove necessary, should be used for the treatment of these classes of person.

The Association has pointed out to the Minister that in the majority of areas the public assistance medical service is provided by part-time salaried medical officers whose salaries are often inadequate and are in any case in respect of the normal public assistance population of the area. The Association has urged the Minister to advise local authorities in reception areas to augment the public assistance medical arrangements, preferably by the adoption, at least for the persons in this group, of the open choice system.

The Minister's reply to this suggestion is now awaited. When it is available, Local Emergency Committees will be advised as to the appropriate local action.

The Definition of the Unaccompanied Child

It has now been ascertained that every child who is boarded by the Government with a householder who receives payment for board and lodging at the rate of 10s. 6d. or 8s. 6d. per child is covered by the existing unaccompanied children's scheme.

Changes

Any medical practitioner who moves from the area of one Local Emergency Committee to that of another is asked to inform the Local Emergency Committee of the area to which he goes of his new address immediately on arrival.

Any practitioner who wishes to alter his statement of intention of service in view of the alteration of the situation since he made his return should intimate the change to this office.

CENTRAL EMERGENCY COMMITTEE
(Central Medical War Committee),
British Medical Association House,
Tavistock Square, W.C.1.

The annual meeting of the National Association of Insurance Committees, which was to have been held in London on October 12, 13, and 14, has been postponed on account of the war.

British Medical Association

SPECIAL COUNCIL MEETING

A special meeting of the Council of the British Medical Association was held at Tavistock Square, London, on September 27. Mr. H. S. Souttar (Chairman of Council) presided, but as most of the matters arose on reports of committees of which Mr. Souttar is chairman, the chair was taken during a considerable part of the proceedings by Dr. H. G. Dain, Chairman of the Representative Body. The others members present were:

Dr. J. W. Bone (Treasurer), Dr. Peter Macdonald (Deputy Chairman of Representative Body), Sir Kaye Le Fleming (Immediate Past Chairman of Council), Mr. N. Bishop harman (Immediate Past Treasurer), Dr. R. H. Balfour Barrow, Professor R. J. A. Berry, Mr. L. R. Broster, Professor A. H. Burgess, Mr. V. Zachary Cope, Mr. W. McAdam Eccles, Dr. A. W. Gardner, Dr. R. G. Gordon, Dr. F. Gray, Dr. E. A. Gregg, Lieutenant-Colonel W. L. Harnett, I.M.S. (ret.), Dr. E. W. Lewis, Mr. E. Lewis Lilley, Sir Ewen Maclean, Dr. O. Marriott, Dr. J. Middleton Martin, Dr. J. C. Matthews, Dr. H. B. Morgan, Mr. R. L. Newell, Dr. W. Paterson, Professor R. M. F. Picken, Colonel A. H. Proctor, Wing Commander T. S. Rippon, R.A.F.M.S. (ret.), Dr. H. Robinson, Dr. F. A. Roper, Mr. R. Scott Stevenson, Dr. W. E. Thomas, Dr. S. Wand, Mr. N. E. Waterfield, Dr. W. N. West-Watson, Mr. A. Hedley Whyte, Dr. W. G. Willoughby.

Medical Treatment of Evacuated Children

Mr. Souttar, as chairman of the Central Emergency Committee, reported that agreement had been reached between the Association and the Ministry of Health on the financial arrangements for the medical treatment of children transferred to reception areas under the Government scheme. The arrangement applied to each child, not accompanied by a parent, who was billeted upon a householder. A sum of money calculated at the rate of 10s. for every such child would be placed at the disposal of each Local Emergency Committee in a reception area to meet the cost of the provision of medical attendance. This money would be disbursed to practitioners undertaking the treatment of children covered by the scheme on a basis devised and approved by the Local Emergency Committee concerned. The amount paid was intended to cover the cost of attendance and provision of medicine. The allocation of medical men for this work was a matter for the decision of the Local Emergency Committees, with whose autonomy the Central Committee in no way interfered. The sum available would be considerable, and, he thought, sufficient. The question of the accompanied children was under discussion with the Ministry. A difficult matter concerned the transfer of practitioners from evacuation to reception areas. Some practitioners were left virtually without their practices. These would be asked to register with their Local Emergency Committee, which would communicate to the Central Emergency Committee the names of those available for transfer to other areas, and the emergency committees in the reception areas would communicate their detailed needs for additional medical personnel also to the Central Committee.

In reply to Dr. Peter Macdonald, Mr. Souttar said that the sum of 10s. a year was the capitation rate per child, *not* per case treated. Dr. Waterfield considered that the rate was entirely inadequate, and he hoped that it had been made clear to the Ministry that in accepting this fee general practitioners considered themselves to be making some contribution to the national situation. Dr. Lewis, speaking from experience of a reception area, said that it was essential that the accompanied children should be on the same footing in this respect as the unaccompanied. In many cases in the absence of any arrangement for remuneration for the accompanied children, the only resort was to public assistance. Dr. Dain said that all these points had been brought to the attention of the Ministry. If a person wished to move from one area to another, the provision of medical services was the responsibility of the person concerned. Only when people were moved by their local authority could the responsibility be undertaken for them; the authorities could not be expected to assume responsibility for those who moved themselves. Sir Kaye Le Fleming also said that all these difficulties had been brought before the Central Emergency Committee, but he hoped the Council would not fail to recognize that a very great concession had been obtained, not at all easily, in the shape of this rate of payment for the unaccompanied children. He was doubtful how far that could be extended to others.

Petrol Rationing

A lengthy discussion took place on the question of petrol rationing for practitioners. Dr. Dain said that the first allocation of extra petrol supply was an immediate allotment to furnish relief while a further claim was being made. It was obvious that some such mechanical method of distribution would have to be put into force, but this did not mean that it was to be considered permanent. The situation was difficult at the moment, but the petrol distribution organization had to be given time to find its feet. Medical practitioners were placed in the highest category of priority and received the largest petrol allowance per h.p. on their cars.

Dr. Lewis Lilley said that he had received an intimation to the effect that the allowance made to him was "the maximum amount allowed under the regulations," and it was only 54 per cent. of his maximum consumption. Dr. Wand said that it seemed to him that the divisional petroleum officers had no real power whatever. Their job was almost mechanical. They had a fixed formula upon which they were bound to work—a formula decided by the Mines Department. There seemed to be two main problems. One was that the doctor who had only one car was penalized in comparison with the doctor with two or three cars. Again, the distribution was so mechanical as to be absurd. No discrimination was made between the rural and the urban practitioners. Unless some arrangement was made centrally with the Ministry it was not clear how the situation could be relieved. Many doctors in Birmingham would be out of their month's supply of petrol in two and a half weeks, and that was an urban area; things might be expected to be much worse in a rural one. It would be a great help if in some way it could be made known to the profession that the situation would shortly be rectified. It was only a question of petrol for the necessary travelling in connexion with practice. The ordinary motor-car user, maintaining his car for pleasure, had a petrol allowance which would suffice for two hundred miles a month. The doctors were not asking for that extra two hundred miles over and above their professional allowance. He thought that strong representation should be made from the Council for some definite statement which might be broadcast and would reassure the profession throughout the country.

Professor Picken, as one who was being "inundated with complaints" on this matter, agreed with Dr. Wand in this respect, that there was need for further central negotiation for the raising of the standard supplementary ration. This ration, which was being given to virtually all practitioners, was not sufficient for the average man, let alone the man wh[illegible] did more than the average mileage. It was not sufficient i[illegible] the town and obviously not nearly sufficient in a coun[illegible] practice of any kind. He thought that if the average med[illegible] man asked for more he should be given it automatica[illegible] unless his demand was obviously unreasonable. Only w[illegible] there was an excessive demand should any question be rai[illegible] about it. There was available in the office of the Associa[illegible] a record of the mileage of typical practitioners in diffe[illegible] parts of the country. The variation in mileage was, of cou[illegible] enormous, but, taking the average, the man in town in [illegible] ran his car for about 168 miles a week, and the av[illegible] man in a difficult country area about 250 miles a week. [illegible] present allowance permitted, as he learned on the basis of a number of returns he had had before him, of about

150 miles a week being done. It was just not enough for the average town practitioner and a long way short for the man in country practice. Dr. Wand had suggested that a man who had more than one car was sometimes at a distinct advantage. This was not uniformly so, but some men with two cars were getting a fair allowance for the two although they did not do more mileage than another man who had only one car. The principle should obviously be rationing by practice and not rationing by car. It was not quite true that the petroleum officer had no powers. The officer in South Wales had told him that when things settled down it was his intention to take individual cases on their merits and if necessary consult the medical adviser.

Mr. Zachary Cope pointed out that the petroleum controllers had had a very big task put upon them. He believed that the controller for London intended to do all that he could for the practitioners in his area, and he thought the same was true of other districts. Many of the points which at present caused difficulty would be put right as time went on. It should not be supposed that the peace-time ration of petrol was the necessary criterion for war time, even for a doctor, because some doctors carried on three or four surgeries at different places, and in his view it was reasonable to economize by some interchange with other practitioners so as to entail less travelling to distant patients.

Dr. Lewis said that he had applied for his petrol allowance in the usual way and got six gallons a month. He applied for a supplementary ration only on one of his two cars, not thinking it justifiable to apply on both, and, taking the basis of 25 miles to the gallon, which was fairly reasonable, he found that he had only received half the allowance for which he had claimed—in other words, he had to make do for two months with the petrol which he would have needed for one month.

Sir Kaye Le Fleming said that there was sufficient evidence from the discussion of great dissatisfaction over this question, and it would be taken up very seriously again. He felt confident that practitioners would all get the petrol they needed when the machinery had had time to settle down.

The Secretary said that obviously the thing to do was for the Association to approach the Mines Department on the ground that the ration already given to practitioners was too low, and also on the ground that following this standard ration individual consideration must be given to the claims put forward. It must not be overlooked, of course, that there were men who put in excessive claims, and there must be some check upon them. The office had been in almost daily communication with the Department of Mines and was prepared to do all that it could to get a reasonable ration for the doctor.

Medical Work at First-aid Posts

Mr. Souttar, again reporting for the Central Emergency Committee, said that it had been agreed with the Ministry that the appropriate rate of payment for doctors at first-aid posts in war time was one and a half guineas per session of not more than two hours' duration, and three guineas for a session exceeding three hours, subject to a total payment of not more than three guineas in respect of any one day. A sessional fee was payable on all occasions when a doctor was required to attend in consequence of an air raid warning. The sessional fee ran from the time of his arrival at the post. The question of an appropriate fee for practitioners who were in charge of first-aid posts had been raised with the Ministry. It was a matter of some difficulty. Such practitioners were expected to train the personnel and to supervise the organization of the stores, and no satisfactory provision had so far been made for this work. The sum arranged originally before the war was twenty guineas per annum, but if a man had to go repeatedly to train his staff and exercise other supervision that sum was inadequate and did not meet the present emergency at all.

Professor Burgess said that the stipulation that the session should run from the time of the arrival of the doctor at the post was all very well for first-aid posts but was inapplicable to doctors attached to emergency civil hospitals, some of which were twenty or twenty-five miles out. If such men were summoned to attend in the middle of the night and had to journey through darkened streets disorganized by air raid conditions they might spend at least an hour in getting to their hospital. He hoped that the analogy of the first-aid post would not be taken in the emergency hospital scheme.

Mr. McAdam Eccles said that most if not all of the medical officers who were giving what was really part-time service on a sessional basis at first-aid posts were quite satisfied with the proposed remuneration. One difficulty was experienced by some medical officers in actually reaching a first-aid post on a warning being given. One of the chief officers—a woman—in the first-aid post with which he was associated, on proceeding to the post after a recent warning (it was fortunately not followed by a raid), was prevented by the air raid warden from going through the streets, and despite her protest was kept in the police office for two hours until the "all clear" was sounded. The position might be met by the issue of steel helmets to all medical practitioners attached to first-aid posts, the helmet being not only a protection but a passport. The part-time officers were also supposed to help in the instruction of the staff, but they were informed by the authorities in his district that if they attended for that purpose no fee would be payable. It was only on an actual air raid warning that they could make a remunerative attendance.

The Secretary said that he had been in almost daily communication with the Ministry of Health on this subject and he was still trying to obtain a satisfactory statement. No provision whatsoever had been made for the payment of men engaged in instructing the personnel attached to first-aid posts or in getting the posts ready. The Ministry had been informed that it was imperative to make some arrangement, and it had been suggested to the Ministry that a meeting of medical officers of health for the metropolitan boroughs should be called, when some of those actually doing this work would be in attendance and be able to state the position.

Dr. Gray said that he hoped he was exaggerating the importance of the first-aid posts. It was possible that such posts would have nothing to do at all. In an industrial area it was considered that either they would have no work whatever to do or, on the other hand, would have a very large number of casualties—anything up to 500. The problem was not merely to give first-aid treatment but to give it to a large number of people in a sufficiently short time. Even if cases could be dealt with at the rate of one a minute in each of the two sections, male and female, a casualty list of 500 could not be got through in less than four hours, which was much too long. At the moment in the absence of air war a splendid opportunity presented itself of getting this organization into perfect working order. At the beginning of the war there was no organization at all, in some cases the buildings were unsatisfactory, in others the staffs had no working unity. Some doctors had been putting in a 100-hour week in order to get the first-aid staffs organized to do this work. Yet doctors were being told that they were not required to come to the posts except to attend casualties in an air raid. Even after the organization had been got into smooth working order it would still be necessary for someone—he hoped a doctor—to keep it up to concert pitch, and that would mean one short session per week per shift, including the shift which carried on from midnight until 8 a.m. It was also very disadvantageous if the lay staff, however well trained, was expected to stand by during an air raid and the doctor was not present. It seemed to him essential that there should be a doctor in real charge of such posts—not merely in nominal charge, coming along after a raid.

The Secretary read a letter which he had addressed on September 15 to the Ministry of Health on the subject of rate of payment for practitioners designated as being in charge of the nursing and first-aid personnel at first-aid posts, pointing out the quite different state of affairs which had existed at those posts since war began, necessitating almost continuous attendance by the medical officers attached, so that it was quite obvious that the peace-time arrangement of twenty guineas per annum was unsuitable. It was suggested in the letter that the sessional fee of one and a half guineas should apply when attendance was given for organization and instructional purposes, or, alternatively, that a substantial retaining fee should be paid.

This letter was approved as expressing the mind of the Council on the subject.

Specialists and the Services

It was reported that it had now been established that a practitioner appointed as a specialist in the R.A.M.C., within the authorized establishment, would be granted the rank of major, and the rank of squadron-leader would be granted to a practitioner similarly appointed in the R.A.F. Volunteer Reserve. The position of specialists entering the Royal Navy was under consideration.

Mr. Hedley Whyte pointed out that there were many specialists serving with the rank of captain or lieutenant. It was true that these men had joined the Territorial Army at a time when no specialist appointments were available. The Local Emergency Committee in his area did not appear to have taken it into consideration that there might be specialists serving who would consider transfer if they were given the opportunity. He had no doubt that in course of time these anomalies would be put right, but the Central Emergency Committee might bring to the notice of the appropriate authority the fact that these men were serving in the junior ranks and should receive promotion because of their specialty.

The Secretary explained that the Association was asked to get a number of specialists for the R.A.M.C. and was told by the Army authorities that when they were posted to the specialist positions at a hospital—and they were all requisitioned on that footing—they would have the rank of major. So far as the Territorial Army was concerned he had raised the question at the War Office and had been told that officers at the Territorial hospitals would be treated in exactly the same way as in the R.A.M.C.; but a number of men had gone into the Territorial Army simply as medical officers to battalions and were now contending that they should be used in a specialist capacity. When a further demand came from the Army for specialists it would be necessary to look through the list of officers who had been in the Territorial Forces and extract those who had claims to be specialists. Then the War Office would be asked, before recruiting civilians, to take some of the men who were in the Territorial Army. That was what was proposed to be done, and he knew that the Army authorities were anxious to do some such combing-out as Mr. Hedley Whyte had indicated.

Dr. R. G. **Gordon** referred to a point raised in the report in connexion with the transfer of practitioners from evacuation to reception areas, in which it was stated that "an incoming general practitioner employed whole-time should be remunerated at a rate not less than that which would obtain if the practitioner in question joined the Services or became a medical officer in the Emergency Medical Service. This minimum whole-time standard is £550 a year, plus £100 where board and lodging are not provided." In the *Supplement* of September 9 it was stated that this arrangement was in order to bring such practitioners in relation with the corresponding rank they would have had had they been commissioned. A practitioner had put the question to him, supposing he required an assistant, who would be a fairly recently qualified medical woman, whether he would be expected to pay her £650 a year when the ordinary lieutenant in the R.A.M.C. received a great deal less.

The Secretary said that the object in the main was to send to the reception areas those doctors who had had their practices taken away from them in the evacuation areas. In forming this scale for the Emergency Hospital Service and for many other services the minimum of £550 a year was considered fair payment. The lieutenant's pay with emoluments amounted to over £500 a year. It had to be remembered that the practitioner himself was asked to enter into a bond that he would not continue to practice in that area. They were doing their best to protect the practices which remained, and it was thought that this arrangement was a fair one to the doctor who had gone into a different area and whose practice in his old area had largely disappeared.

The Report of the Central Emergency Committee was approved.

Association Business during War Time

The Council agreed to appoint an executive committee to conduct the business of the Association at such times as it was not found practicable to hold meetings of the Council, the committee to consist of the following: the Chairman of Council (Mr. H. S. Souttar), the Chairman of the Representative Body (Dr. H. G. Dain), the Treasurer (Dr. J. W. Bone), the Deputy Chairman of the Representative Body (Dr. Peter Macdonald), all *ex officio,* together with Sir Kaye Le Fleming, Mr. N. Bishop Harman, and Dr. R. G. Gordon, and the Secretary and Editor in attendance, other persons to be called in consultation at the discretion of the Chairman of Council.

Professor Picken said that he was unwilling to entrust to a very small body, however highly competent, the Association's affairs over what might be a lengthy period, without the Council being called together. Very grave issues were likely to arise in relation to medical practice as a result of the war, and the state of affairs which would come about either during the war itself or most certainly after it must be borne constantly in mind. Important matters in relation to public health were also likely to come forward, and he would not care to see these handled by a small group who had only a limited knowledge of the problems. He thought that this question had to be considered from a wider outlook than that of mere immediate efficiency.

After other members of the Council had spoken an addendum was agreed to that the Council should be called together at least twice in the year as well as on other occasions when the Executive Committee deemed it necessary.

The decision of the provisional executive committee to cancel the Annual Meeting to be held in Birmingham in July, 1940, was reported and approved. It was stated that expenditure in Birmingham had already been incurred to the amount of about £300, and it was agreed that the Association should defray this expenditure in full.

The Chairman of Council mentioned certain important decisions which had been arrived at with regard to the new buildings of the Association as affected by the present crisis.

In view of the possibility that a meeting of the full Council might not be called in November, when the Board of Directors of the *British Medical Journal* came up for reappointment, the present meeting decided to reappoint the Board for a period of one year as follows: Professor R. J. A. Berry, Dr. R. G. Gordon, Dr. J. C. Matthews, Dr. H. Robinson, and Mr. R. Scott Stevenson.

Notification of Measles and Whooping-cough

The Secretary read a letter from the Ministry of Health stating that it was proposed to make measles and whooping-cough compulsorily notifiable during the present emergency and suggesting that a notification fee of one shilling instead of two shillings and sixpence be paid to practitioners.

Professor Picken said that if information was desired about the incidence of measles it could be obtained by notification of the first case in a house, for which a fee of two shillings and sixpence was ordinarily paid. This assumed, however, that the local authorities had sufficient staff to go round and make inquiries, otherwise they would not get the information desired. It was therefore thought it would be cheaper to make every case of measles notifiable so that the information would come to them without any need for searching or for maintaining public health staff for that purpose. The question was why this economy should be exercised at the expense of the profession.

Dr. Waterfield, Dr. Gray, Dr. Wand, and others expressed the view that the medical profession should not undertake such notification except at the regulation fee of two shillings and sixpence, and a motion to that effect was carried.

This concluded the business before the Council.

British Medical Association

OFFICES, BRITISH MEDICAL ASSOCIATION HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

Addresses, etc.

SECRETARY (Telegrams: Medisecra Westcent, London).

EDITOR, BRITISH MEDICAL JOURNAL (Telegrams: Aitiology Westcent, London).

SUBSCRIPTIONS, ADVERTISEMENTS, etc. (Telegrams: Medisecra Westcent, London).

Telephone number of British Medical Association and British Medical Journal, Euston 2111 (internal exchange, six lines).

SCOTTISH SECRETARY: 7, Drumsheugh Gardens, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 24361 Edinburgh.)

Cumann Doctúirí na h-Éireann (I.M.A. and B.M.A.): 18, Kildare Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 62550 Dublin.)

Sir Charles Hastings Clinical Prize

The Sir Charles Hastings Clinical Prize, which consists of a certificate and a money award of fifty guineas, is again open for competition in respect of 1940. The following are the regulations governing the award:

1. The prize is established by the Council of the British Medical Association for the promotion of systematic observation, research, and record in general practice; it includes a money award of the value of fifty guineas.

2. Any member of the Association who is engaged in general practice is eligible to compete for the prize.

3. The work submitted must include personal observations and experiences collected by the candidate in general practice, and a high order of excellence will be required. If no essay entered is of sufficient merit no award will be made. It is to be noted that candidates in their entries should direct their attention mainly to their own observations in practice rather than to comments on previously published work on the subject, though reference to current literature should not be omitted when it bears directly on their results, their interpretations, and their conclusions.

4. Essays, or whatever form the candidate desires his work to take, must be sent to the British Medical Association House, Tavistock Square, London, W.C.1, not later than December 31, 1939. The prize will be awarded at the Annual General Meeting of the Association to be held in July, 1940.

5. No study or essay that has been published in the medical press or elsewhere will be considered eligible for the prize, and a contribution offered in one year cannot be accepted in any subsequent year unless it includes evidence of further work. A prizewinner in any year is not eligible for a second award of the prize.

6. If any question arises in reference to the eligibility of the candidate, or the admissibility of his or her essay, the decision of the Council on any such point shall be final.

7. Each essay must be typewritten or printed, must be distinguished by a motto, and must be accompanied by a sealed envelope marked with the same motto, and enclosing the candidate's name and address.

8. The writer of the essay to whom the prize is awarded may, on the initiative of the Science Committee, be requested to prepare a paper on the subject for publication in the *British Medical Journal*, or for presentation to the appropriate Section of the Annual Meeting of the Association.

9. Inquiries relative to the prize should be addressed to the Secretary.

Meetings of Branches and Divisions

BRITISH GUIANA BRANCH

At a clinical meeting of the British Guiana Branch, held at Georgetown on June 28, with Dr. R. T. BAYLEY in the chair, the following cases were shown.

By Dr. M. O. LUCK: Stone in the ureter; ectopic kidney; and a case in which a provisional diagnosis of Addison's disease had been made. All three were in adult male Africans.

By Mr. D. I. C. FINLAYSON: (1) Deep jaundice in a man of mixed race. Shadows suggestive of gall-stones were demonstrated by *x* rays. In view, however, of the patient's advanced age and extreme emaciation the possibility of coincident carcinoma was discussed. At subsequent operation no gall-stones were found, but a malignant process in the hilar region probably arising from the hepatic ducts. Mr. Finlayson also showed (2) a pathological specimen of a small rounded tumour in the lumen of the ileum which gave rise to intussusception in an adult male African. Histological examination of the tumour showed it to be a papilloma of simple nature but with certain areas of infiltration suggestive of a possible early malignant change.

By Dr. E. G. H. PAYNE: Generalized adenitis of syphilitic origin in an adult male African (syphilitic adenopathy).

By Dr. B. B. G. NEHAUL: (1) Herpes zoster in an African female aged 42. Three weeks previously she had fallen down and hit her chest, and later suffered from pain at the site. She had applied a liniment; subsequently vesicles appeared occupying a band-like area about three inches wide across the lower part of the left side of the chest from the mid-line in front to the mid-line posteriorly, corresponding to the distribution of the seventh and eighth intercostal nerves. The patient had attributed the vesicle formation to the liniment. (2) Psoriasis in an aboriginal Indian aged 30.

Dr. P. A. CLEARKIN, Government pathologist, demonstrated the following specimens: (*a*) Tubal pregnancy which went to full term. The right tube formed a sac for the foetus and membranes without rupturing. The uterus was about the normal size. The os was not dilated. The patient passed into labour and died. At necropsy the foetus was found filling the abdomen. A perinephric abscess was found on the right side. (*b*) Heart in a fatal case of gonococcal endocarditis. Ante-mortem blood culture showed a growth of a small Gram-negative diplococcus which gave all the cultural reactions of the gonococcus. The aortic valves showed vegetations, and one of the cusps was perforated. An infarct was found in the upper pole of the left kidney. (*c*) Tuberculous lung: The sputum was negative for tubercle bacilli ante mortem, but showed numerous moniliform organisms. Few tubercle bacilli were seen in smears taken post mortem. Histological examinations showed typical tuberculous lesions. (*d*) Acute necrosis of the liver. (*e*) Enlarged spleen (malarial); weight 2½ lb. (*f*) Horshoe kidney. There were no symptoms ante mortem; it was discovered at necropsy on an East Indian female. The two kidneys were joined at the lower poles by a band of renal tissue. (*g*) Massive pulmonary collapse. The oesophagus at the level of the bifurcation of the trachea was constricted by a hard fibrous ring which reduced the lumen to the diameter of a narrow probe. There was no ulceration, and only a few regional lymph nodes were affected. No metastatic deposits in other organs were noted. Histologically the growth was a scirrhous carcinoma. Right lung solid, dry, and airless. All the veins were distended and filled with blood clot. Left lung apex collapsed. The cause of the collapse was doubtful in view of the small size of the carcinoma of the oesophagus.

SURREY BRANCH

At the annual meeting of the Surrey Branch, held at Richmond on June 28, the following officers were elected:

President, Dr. D. Stark Murray. *Past-President*, Dr. J. Hussey. *President-Elect*, Dr. G. D. Laing. *Honorary Secretary and Treasurer*, Dr. P. V. Fry.

About 120 members and their guests attended a luncheon at Ham Common at the invitation of the Richmond Division. The MAYOR OF RICHMOND welcomed the Branch members to Richmond and gave his speech of welcome at the luncheon. After the toast of "The King" the CHAIRMAN OF THE RICHMOND DIVISION proposed "The Guests," and the MAYOR OF BARNES responded. The annual meeting followed, and Dr. STARK MURRAY was inducted as president. He then gave his address on "The Scientific Approach to Medical Problems." He spoke of the science as compared with the art of medicine, of the need for scientific investigation and inquiry as essential to correct diagnosis, and the increasing need for a fuller understanding by general practitioners of the usefulness of the work of the clinical pathologist. The scientific approach was essential not only to the problems of clinical medicine but to larger medical problems, and would lead to a consideration of, for example, environment in relation to illness, the relationship of preventive and curative measures, the extension of team-work within the profession, the assessing and trial of new preparations, the carrying out of research by the general practitioner, and the advancement of the scientific principle throughout the profession. A hearty vote of thanks was unanimously accorded Dr. Stark Murray for his address.

After the meeting members and their guests went to the Star and Garter Home, Richmond Hill, where they were welcomed by the commandant, Lieutenant-Colonel E. L. Gowlland, who gave some interesting information about the formation and functions of the home, and who permitted the visitors to view the premises. The Richmond Division provided tea and refreshments at the home, and a very successful day was brought to a conclusion. The retiring president, Dr. Hussey, thanked the Division on behalf of the Branch for its hospitality.

YORKSHIRE BRANCH: HUDDERSFIELD DIVISION

At the annual meeting of the Huddersfield Division, held on July 18, the secretary's annual report was considered and approved. The agenda of the Annual Representative Meeting was considered and the representative instructed accordingly. The Irving golf cup was presented to the winner, Dr. D. Guest. The officers and committee for the ensuing year were elected.

LIBRARY OF THE B.M.A.

It is requested that members of the B.M.A. proceeding on Service will return all library books and journals.

The Library service is one of the privileges available to members of the British Medical Association resident in Great Britain and Ireland. Full particulars will be forwarded on application to the Librarian, B.M.A. House, Tavistock Square, London, W.C.1.

The following volumes were added to the Library during August, 1939:

Beaumont, W.: Diathermy. 1939.
Bergey, D. A., *et al.*: Manual of Determinative Bacteriology. Fifth edition. 1939.
Berry, R. J. A.: Your Brain and its Story. 1939.
Bertho, A., and Grassman, W.: Laboratory Methods of Biochemistry. 1938.
Bogert, L. J.: Nutrition and Physical Fitness. Third edition. 1939.
Brocq-Rousseu, D., and Roussel, G.: Le Sérum Normal. Propriétes Physiologiques. 1939.
Browne, F. J.: Antenatal and Postnatal Care. Third edition. 1939.
Carraro, N., and Wigmeister, I.: L'Ipertrofia della Prostata. 1938.
Clark, K. C.: Positioning in Radiography, 1939.
Clark, Le Mon.: Vaginal Diaphragm. 1939.
Cowdry, E. V. (Editor): Problems of Ageing.
Fluhmann, C. F.: Menstrual Disorders. 1939.
Hirschfeld, J.: Toothbrush: Its Use and Abuse. 1939.
Iriarte, D. R.: Trabajos Cientificos. 1937.
Johnston, T. B.: Synopsis of Regional Anatomy. Fourth edition. 1939.
McGregor, A. L.: Synopsis of Surgical Anatomy. Fourth edition. 1939.
Megroz, R L.: Dream World. 1939.
Muir, E.: Leprosy, Diagnosis, Treatment, and Prevention. Sixth edition. 1938.
Pertsov, I. A. (Editor): Health Resorts of the U.S.S.R. 1939.
Ranson, S. W.: Anatomy of the Nervous System. Sixth edition. 1939.
Rice, T. B.: Textbook of Applied Microbiology and Pathology. Second edition. 1939.
Roger, H., and Poursines, Y.: Les Méningo-Neurobrucelloses. 1938.
Ross, J. M.: Post-mortem Appearances. Fourth edition., 1939.
Ruhman, W.: Rheuma und Hautreiz. 1937.
Ruhman; W.: Drastische Hautreizbehandlung. 1938.
Trowell, H. C.: Diagnosis and Treatment of Diseases in the Tropics. 1939.
Turner, C. E.: Personal and Community Health. Fifth edition. 1939.
Walker, N., and Percival, G. H.: Introduction to Dermatology. Tenth edition. 1939.
Weissenbach, R. J., and Françon, F.: Les Rheumatismes, Maladies Sociales. 1939.
Wohlfeil, T.: Die Diphtherieseuchenwelle in Deutschland und ihre Bekämpfung mittels der aktiven Schutzimpfung. 1939.
Zinsser, H., and Bayne-Jones, S.: Textbook of Bacteriology. Eighth edition. 1939.

Assurance for Doctors

The Medical Insurance Agency will endeavour to advise members as to changes in assurance conditions arising out of the war and other related topics of interest to the profession. Such advice will be tendered, as hitherto, in brief communications which will continue to appear in this *Supplement*.

Naval, Military, and Air Force Appointments

ROYAL NAVAL MEDICAL SERVICE

Surgeon Lieutenant Commander M. A. Graham-Yooll to be Surgeon Commander.

ROYAL NAVAL VOLUNTEER RESERVE

To be Surgeon Lieutenant Commanders: R. S. Thomas, J. M. McEwan, D. M. Reid, and S. B. White.

Surgeon Lieutenant R. G Reid to be Surgeon Lieutenant Commander.

Probationary Surgeon Lieutenants A. D. Petro, G. L. Ward, C. E. B. Rickards. H. Miller, F. G. Ward, R. W. Smith, T. T. Hardy, J. N. Cave, C. S. Cave, H. K. Childs, and R. L. Thompson to be Surgeon Lieutenants.

Lieutenant Commander T. G. Willis, R.N. (ret.), to be temporary Surgeon Lieutenant.

A. H. D. O. Richmond, L. D Arden, A. B. R. Finn, D. H. T. Duggan, C. H. Terry, W. W. Wildman, and S. J. H Miller to be temporary Surgeon Lieutenants.

ROYAL AIR FORCE MEDICAL SERVICE

The following have been granted short service commissions as Flying Officers for three years on the active list as from September 4, 1939, and with the seniorities indicated in parentheses: A. R. Agate, J. L. Brown, L. W. Davies, M. McLellan, F. T. Moore, R. Napier, W. R. Parker, J. W. Reade, and A. Wardale (September 4, 1938), R. Maycock (March 13, 1939), B. C. Curwood, C. Huddlestone J. A. MacCarthy, and A. McDougall (September 4, 1939).

ROYAL AIR FORCE RESERVE: MEDICAL BRANCH

J. J. Conybeare, M.C., has been granted a commission for the duration of hostilities as Group Captain

Postgraduate News

The times of the lectures to be given at the London Homoeopathic Hospital (Great Ormond Street, W.C.) have been altered as follows: Honyman Gillespie Lectures by Dr. C. E. Wheeler on Mondays and Thursdays at 2 p.m., beginning on October 16; Compton Burnett Lectures by Sir John Weir on Fridays at 2 p.m., beginning October 13; Tutorial Class on Fridays at 3 p.m., beginning October 13; Clinical Tutorials on Mondays and Fridays at 11 a.m.; introductory lecture to this course, October 12, at 2.30 p.m.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

Section of Therapeutics and Pharmacology.—Tues., 2.30 p.m. Presidential Address by Sir William Willcox: Pharmacy and Pharmacology.

Medical Society of London, 11, Chandos Street, W.—*Mon.*, 5.15 p.m., Annual General Meeting. 5.30 p.m., Presidential Address by Mr. V. Zachary Cope: The Profession of Surgery.

VACANCIES

Examining Factory Surgeon.—The appointment at Manningtree (Essex) is vacant. Applications to the Chief Inspector of Factories, Home Office, Whitehall, S.W.1, by October 17.

Medical Referee under the Workmen's Compensation Act, 1925, for the County Court Districts of Bradford, Keighley, Otley, and Skipton (Circuit No. 12). Applications to the Private Secretary, Home Office, Whitehall, S.W.1, by October 23.

APPOINTMENTS

Blackman, H. G. B., M.R.C.S., L.R.C.P., Examining Factory Surgeon for the Wiveliscombe District (Somerset).

Ritchie, T. F., D.S.O., M.B., Ch.B., Lieutenant-Colonel, R.A.M.C. (ret.), Assistant Medical Officer (Civil Defence—Medical Service), Birkenhead.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this heading is 9s. This amount should be forwarded with the notice, authenticated by the name and address of the sender, and should reach the Advertisement Manager not later than the first post Tuesday morning to ensure insertion in the current issue.

DEATH

Comrie.—At 25, Manor Place, Edinburgh, on October 2, 1939, after a few months' illness, John Dixon Comrie, M.A., B Sc., M.D., Vice-President, Royal College of Physicians, Edinburgh, Lecturer on the History of Medicine at the University of Edinburgh in his sixty-fifth year; son of the late Dr. John Dixon Comrie, Peterhead.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 14 1939

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WAR NOTICES

First-aid Posts

1. It will be recalled that in April of this year it was agreed between the Ministry and the British Medical Association that practitioners designated to be in general charge of personnel at first-aid posts should be remunerated at 20 guineas a year. It was understood that in return for this fee the practitioner would attend at least once a month for the purpose of supervising the collective training of personnel assigned to the first-aid post.

2. At the outbreak of war an entirely new situation arose, particularly in the London area. Many medical practitioners attached to first-aid posts assumed heavy responsibility in organizing those posts and in training personnel who were in the main inadequately trained. In some areas this meant practically whole-time work in the early weeks of the war. The Association raised this issue with the Ministry of Health, pointing out that the rate of payment which had been agreed between the Association and the Ministry was regarded as a peace-time arrangement, and that it was obvious that a fee of 20 guineas per annum for the work undertaken in the early part of the war was entirely inadequate. The sessional fee, on the other hand, was regarded as adequate for attendance during an air raid or attendance at the first-aid post from the moment the warning is sounded. The Association also raised the general question of the future remuneration of practitioners attached to first-aid posts for the continuous day-to-day supervision that would be needed to maintain standards of efficiency and co-operation.

3. In reply to these representations the Ministry of Health indicated on September 21 that it recognized that where some personnel are being employed whole-time at first-aid posts, some intensive training must devolve on the doctors for a period after the outbreak of war, and that it was reasonable that such doctors should receive additional remuneration to cover the extra work of bringing the personnel up to war-time efficiency. The Ministry suggested an increase in the fee for collective training of 10 guineas for six months to doctors in the first-aid posts in question. This fee would be payable only where the doctor was attached to a post at which whole-time personnel had been authorized and were employed, and where the medical officer of health considered that the attendance by the doctor at his post, over and above what he had been doing in peace-time, was necessary in order to bring the personnel up to a proper standard of efficiency.

4. On September 22 the Association informed the Ministry that it regarded these proposals as quite unsatisfactory. It was suggested to the Ministry that it had not appreciated the magnitude of the problem and the nature and extent of the intensive work which had been carried out on the instructions of medical officers of health by practitioners attached to first-aid posts. It was suggested to the Ministry that there should be convened a meeting of representative practitioners attached to first-aid posts and representative medical officers of health.

5. In reply the Minister agreed to receive a deputation of representative practitioners and medical officers of health for a discussion of the whole situation. This meeting took place on October 5, and the opportunity was taken to urge upon the Minister an immediate revision of policy on this subject. The reply of the Minister is now awaited.

Petrol Rationing

6. As a result of the strong pressure which the Association has brought to bear on the Petroleum Department, the Divisional Petroleum Officers have been authorized to issue to medical practitioners, without reference to the Department in London, a second supplementary ration up to a maximum representing a very substantial increase in the total allowance which they have hitherto been permitted to give on their own responsibility. Appeals from medical practitioners who require more than the maximum second supplementary ration will be considered as early as possible, but for the time being these cases must be referred to London in order that the staff of the Petroleum Department may take the measure of the problem. The Association will continue to do everything possible to ensure that the legitimate claims of medical practitioners are dealt with reasonably and expeditiously.

The Unaccompanied Children Pool

7. The difficulty of devising appropriate financial machinery for paying the Unaccompanied Children Pools in reception areas has been increased by the movements of those sent into these areas since the original evacuation. In some cases further evacuation has taken place, and in many instances persons evacuated have returned to their homes.

8. It has been provisionally agreed with the Ministry that a payment on account should be made to all local Pools in November or early December. This amount will be in respect of the four-months period ended December 31, and will be distributed by Local Emergency Committees within a few days of that date. It is an interim payment, and a further payment in respect of the same four-months period will be made early in the New Year when the fuller figures are available. The actual formula to be employed in arriving at the final estimate is now the subject of negotiation.

9. From January 1, 1940, payments will be made quarterly, but the administrative details must necessarily be decided in the light of the circumstances obtaining next year.

House-men and the Emergency Medical Service

10. A large number of house officers enrolled in the Emergency Medical Service have, within the past few days, received a letter from the Ministry of Health cancelling their appointments on the grounds that "it was not appreciated that they were under contract to a hospital." The Association immediately raised this matter with the Ministry of Health, which has now decided to pay for three months the salary to all house officers recruited in class A (g) of the Service—that is, at the rate of £350 per annum.

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11. The terms and conditions of service and the methods of recruitment of house officers are under review and will be the subject of an early announcement. In this review the various anomalies to which attention has been drawn will be rectified.

Women Practitioners in the Army Medical Services

12. It was reported in these War Notices in the *Supplement* of September 30 that the Army had authorized a scheme for the employment of women practitioners with the Army Medical Services. The first request received by the Central Emergency Committee from the War Office for ten women practitioners under 40 has been met and the appropriate recommendations made to the War Office.

13. It is not yet known when further requests will be received for women practitioners for service with the Army or with other Services, or what the size or nature of any future request may be. There is, however, being maintained at this office a reserve list of women practitioners who desire to volunteer for such Services, and any practitioner who desires that her name should be added to the list should report this fact to the Secretary of the Local Emergency Committee in her area.

Transfer of Public Health Practitioners

14. There will be found in this *Supplement* a summary of Circular 1882 issued by the Ministry of Health. In this circular local authorities in reception areas are advised to adopt one of two methods in obtaining any additional public health personnel they need. They may arrange directly with the local authority of the evacuation area from which their additional population has been received to transfer a medical officer, the responsibility for paying such a transferred officer remaining with the evacuation authority. On the other hand, a local authority in a reception area may, through its medical officer of health, report its need to the Local Emergency Committee, which will request the Central Emergency Committee to make available to the reception authority a practitioner or practitioners from the reserve list maintained at this office. If this method is adopted the local authority of the reception area will appoint and remunerate the transferred practitioner, recovering the cost as an evacuation charge from the Government.

CENTRAL EMERGENCY COMMITTEE
(Central Medical War Committee),
British Medical Association House,
Tavistock Square, W.C.1.

BILLETING OF DOCTORS

It has been found, states an amending circular (Circular 1883) from the Ministry of Health to local authorities on the billeting of extra doctors and hospital staffs, that as a rule it is more convenient for such staff to take their main meals, if not all of them, in the hospital. Where this is so the hospital staff should be billeted on the "accommodation" instead of on the "board and lodging" basis, and the householder paid 5s. a week for each person instead of 21s. It is again emphasized, as in the earlier circulars on this subject issued on August 24 last, that the streets and houses selected for billeting hospital staff should be within one mile of the institution to be served, and should be as quiet as possible, as some of the staff have to sleep in the day time. Medical officers who are enrolled in the Emergency Medical Service are paid direct by the Ministry, with an allowance for board and lodging if these are not provided. If the doctor is billeted 21s. will be withheld from his allowance, but the difference between 21s. and that allowance will be paid to him in consideration of meals which must be taken out and of transport between the billet and the hospital. If he arranges to have a meal in the hospital he should be charged an appropriate messing fee, and no cost should fall on the hospital. Medical students who are assisting in the Emergency Hospital Service but are being paid no salary should be provided with board and lodging, where that is necessary, without charge, and the costs included in the running costs of the hospital, in respect of which a claim may be made on the Ministry.

EMERGENCY HOSPITAL SCHEME

GROUP OFFICERS AND HOSPITAL OFFICERS

The Ministry of Health and the Welsh Board of Health have supplied the following up-to-date lists of those medical practitioners who have been appointed Group Officers and Regional Hospital Officers. Those Group Officers whose names are marked with an asterisk are employed on a part-time basis; the remainder are on a whole-time basis.

GROUP OFFICERS FOR LONDON

Sectors I and II.—Russell Howard, C.B.E., F.R.C.S., Essex County Hospital, Hermon Hill, Wanstead.
Sector III.—Sir Girling Ball, F.R.C.S., Science Block, Mill Hill School, Mill Hill, Middlesex.
Sector IV.—W. J. Pearson, D.S.O., M.C., M.D., F.R.C.P., Brockley Hill House, Brockley Hill, Stanmore.
Sector V.—H. E. A. Boldero, M.D., F.R.C.P., Charlbury, Chorley Wood Road, Rickmansworth.
Sector VI.—Sir Charles Wilson, M.C., M.D., F.R.C.P., Cave House, High Street, Uxbridge.
Sector VII.—C. H. S. Frankeau, C.B.E., D.S.O., F.R.C.S., Percy House, P.A.I., Twickenham Road, Isleworth (Middlesex C.C.).
Sector VIII.—C. Max Page, D.S.O., F.R.C.S., Surrey County Hall, Kingston-upon-Thames (Surrey C.C.).
Sector IX.—John Hunter, M.C., F.R.C.S., "Sherwood," adjoining Horton Mental Hospital, Epsom (L.C.C.).
Sector X.—Professor T. B. Johnston, M.D., Boundary House, Orpington P.A.I. (Kent C.C.).

GROUP OFFICERS FOR PROVINCES

Birmingham.—L. G. Parsons, M.D., F.R.C.P., Public Health Department, The Council House, Birmingham 3.
Liverpool.—K. W. Monsarrat, F.R.C.S.Ed., The Medical Institution, Liverpool 3.
Manchester.—A. H. Burgess, F.R.C.S., 17, St. John Street, Manchester 3.
Sheffield.—A. G. Yates, M.D., F.R.C.P., 53, Wilkinson Street, Sheffield 10.
Leeds.—Harold Collinson, C.B., C.M.G., D.S.O., F.R.C.S., 27, Park Square, Leeds 1.
Bristol.—Professor Hey Groves, M.D., F.R.C.S., 25, Victoria Square, Clifton, Bristol.
Newcastle.—F. C. Pybus, F.R.C.S., Windsor House, Jesmond Road, Newcastle-upon-Tyne 2.
Hull.—*T. Ritchie Rodger, M.D., F.R.C.S., J.P., 21, Albion Street, Hull.
Bradford.—J. F. Allan, M.B., Ch.B.Ed., Bridge End, Low Baildon, Shipley, Yorks.
Stoke-on-Trent.—*E. C. Myott, M.D., B.S., 10, Brook Street, Stoke-on-Trent.
Brighton.—L. A. Parry, M.D., F.R.C.S., 5, The Drive, Hove, Sussex.
Walsall.—*Robert Forrest, M.B., Ch.B., "Halmot," Broadway, Walsall.
Reading.—*G. O. Lambert, M.D., M.R.C.P., 9, Eldon Square, Reading, Berks.
Oxford.—*Major-Gen. Sir Robert McCarrison, C.I.E., M.D., F.R.C.P., 41, St. Giles', Oxford.
Exeter.—*Col. R. Pickard, C.B., C.M.G., M.D., F.R.C.S., 1, Barnfield Crescent, Exeter.
Nottingham.—*W. T. Rowe, M.C., M.D., F.R.C.P., 8, The Ropewalk, Nottingham.
Leicester.—*John P. W. Jamie, M.C., M.D., Public Health Department, 17, Friar Lane, Leicester.
Coventry and Warwick.—*G. G. Alderson, M.B., B.Ch., F.R.C.S., Offchurch, Leamington.
Derby.—*F. G. Lescher, M.C., M.D., M.R.C.P., 307, Burton Road, Derby.
Sunderland.—*Paige C. Arnold, M.D., B.S., 13, Grange Terrace, Sunderland.
Cambridge.—Professor J. A. Ryle, M.D., F.R.C.P., Regius Professor of Physic, Department of Medicine, University of Cambridge.

WALES

Cardiff.—*R. Armstrong, M.B., Ch.B., Cardiff Royal Infirmary, Newport Road, Cardiff.

REGIONAL HOSPITAL OFFICERS

No. 1 Northern Region.—Col. H. T. Bates, O.B.E., M.B., Ch.B., Clarendon House, Clayton Street West, Newcastle-upon-Tyne.
No. 2 North Eastern Region.—C. F. Good, M.R.C.S., 8, The Headrow, Leeds.
No. 3 North Midland Region.—G. C. Kelly, M.D., 28A, Regent Street, Nottingham.
No. 4 Eastern Region.—A. L. Banks, M.D., University of Cambridge, Tennis Court Road, Cambridge.
No. 5 London Region.—J. Nairn Dobbie, M.B., 21, Cromwell Road, S.W. 7.
Deputy: Wing-Commander Brown.

No. *6 Southern Region.*—A. L. Dykes, M.D., 17, Bath Road, Reading.
No. *7 South-Western Region.*—C. R. Nicholson, M.R.C.S., 3, Woodland Road, Tyndall's Park, Bristol.
No. *8 Wales Region.*—A. Trevor Jones, M.D., Welsh Board of Health, Cathays Park, Cardiff.
Deputy: H. Collin Davies, M.D.
No. *9 Midland Region.*—Col. A. B. Ward, C.B.E., D.S.O., M.B., 139, Hagley Road, Edgbaston, Birmingham 16.
Deputy: A. E. Tudor Hart, M.R.C.S.
No. *10 North-Western Region.*—W. H. C. Patrick, M.D., Sunlight House, Quay Street, Manchester.
Deputy: Lieutenant-Colonel Dunn.
No. *12 South-Eastern Region.*—W. S. M. Craig, M.D., The Chestnuts, Grove Hill Road, Tunbridge Wells.

PUBLIC HEALTH SERVICES IN RECEPTION AREAS

A comprehensive statement (Circular 1882) on public health services in reception areas has been sent by the Ministry of Health to county councils and local receiving and evacuation authorities, including the metropolitan boroughs. The subject is considered under nine headings: personnel, medical arrangements for school children, medical treatment for mothers and young children, maternity and child welfare services, arrangements for expectant mothers and young children, additional hospital accommodation for infectious diseases, provision of "sick bay" accommodation for minor illness, emergency hospital scheme, and difficult children. An appendix deals with day or residential nurseries.

In the opening paragraphs attention is drawn to the need for continued co-operation and collaboration between the authorities of evacuation areas and reception areas, and for the former to continue to give every assistance to the latter in providing health services for their increased populations. Evacuation, it is pointed out, does not mean that evacuation authorities are to be relieved of all existing burdens for their transferred populations because services are being provided elsewhere.

Personnel

On being informed of receiving authorities' needs evacuation authorities should release such staff—medical officers, school dentists, nurses, midwives, health visitors, and staffs of fever and other hospitals—as may be practicable, at least as a temporary measure. The staff will remain in the service of the evacuation authority, who can seek advice from the Ministry's Regional Medical Officers on the co-ordination of demands from different receiving authorities. Where no arrangement has been made for the evacuation authority to continue to pay the salaries of the staff supplied the receiving authority should make such payment in the first instance as a charge to be reimbursed by the Ministry and allocated finally between the Exchequer and the evacuation authority.

As regards medical staff, receiving authorities should, where no direct arrangement has been made with evacuation authorities, make known their requirements to the Secretary of the Central Medical War Committee, British Medical Association House, Tavistock Square, London, W.C.1, and evacuation authorities should supply the Committee with the names of those medical officers whom they would be prepared to release temporarily. Under this procedure receiving authorities would pay the salaries, subject to reimbursement as above.

It is suggested that nursing staffs of casualty hospitals might, after consultation with the Hospital Officer for the region and the hospitals concerned, undertake work among the evacuated population until it may prove necessary to recall them. The hospitals will continue to pay nurses transferred in this way, the cost being included in the claim for the expenses of providing the casualty service.

Any proposals by receiving authorities for the employment of additional staff for the extended health services will require the Minister's approval, and should be submitted in the first instance to the Ministry's Regional Medical Officers.

Medical Attention for School Children

Attention is drawn to the need for extending the school medical service to the increased school population, and here again authorities in evacuation areas are asked to release for this purpose any of their school medical officers who can be spared. School nurses should not be diverted to other duties if there is need of their services in the reception areas.

Arrangements have been made in co-operation with the Central Medical War Committee of the British Medical Association for the domiciliary treatment by general practitioners of unaccompanied school children. There will be no charge to the householder, and the practitioner will be paid by the Local Medical War Committee, not the local authority. Mothers with young children under school age who are able to pay for the attendance of a local doctor should do so. If they have not sufficient means the district medical officer should be called in.

Maternity and Child Welfare Services

Arrangements should be made to extend to mothers and children under 5 who have been evacuated the existing welfare facilities, including health visiting, infant welfare centres, ante- and post-natal work, dental treatment, and cheap milk or meals for expectant and nursing mothers and young children. Special emphasis is laid on the arrangements for the supply of milk and meals to expectant and nursing mothers and children under school age being available to the evacuated population equally with the ordinary population of the area. Evacuation authorities should help by releasing personnel and by lending equipment where necessary and practicable.

In some areas difficulty has been experienced in providing accommodation for women before admission to or discharge from an emergency maternity home. It is suggested that local authorities should consider establishing mothers' hostels within easy reach of the maternity homes, the mothers either boarding themselves or contributing to the cost. Mothers whose confinement can take place in billets should, if they can afford to do so, arrange with the householder for their maintenance during confinement. An expectant mother who is not entitled to maternity benefit and is unable from her own resources to arrange for her maintenance will be eligible for an allowance from the local office of the Ministry of Labour. Where confinement takes place in a maternity home or hospital the cost or such proportion of the cost as the woman's means allow should be recovered by the welfare authority.

Infectious Diseases

The need for additional accommodation for the treatment of infectious diseases, notifiable and otherwise, should, the circular states, be regarded as urgent, and in general could best be met by the adaptation and equipment of empty houses. Proposals for this purpose should be submitted in the first instance to the Ministry's Regional Medical Officers. Recourse may be had, where satisfactory arrangements cannot be made, to the requisitioning powers delegated by the Minister to the clerks of local authorities. Some redistribution of the trained nursing staff between existing institutions and the new emergency accommodation and some additional staff from the Civil Nursing Reserve may be necessary. Evacuation authorities should also assist by releasing nurses with experience of work in fever hospitals. Arrangements are being made for the central purchase of furniture and equipment for this additional accommodation. Medical officers of health should make their needs known to the county medical officer for transmission to the Ministry.

"Sick Bay" Accommodation for Minor Ailments

The Minister is prepared, providing his Regional Medical Officer is satisfied of the need, to authorize the provision of accommodation in separate houses for children suffering from minor illnesses or convalescent from more serious illnesses who cannot properly be cared for in their billets. The establishment of these "sick bays" requires careful medical control; cases should be admitted only on the recommendation of a medical practitioner, the practitioner should continue to attend regularly at the "sick bay," and the staff should include at least one trained nurse.

Emergency Hospitals Scheme

Reference is made to an earlier communication from the Chief Medical Officer of the Ministry to medical officers of health, which stated that while there must not be any conflict with the discharge by the casualty hospitals of their proper functions, the extent to which any accommodation could be available for other purposes would necessarily depend on the number and nature of casualties. It was not intended that any provision not immediately required for casualties should be left unused while cases of serious illness were unprovided for. The Government is prepared to pay receiving hospitals for the cost of providing in-patient treatment for children who have been evacuated unaccompanied by an adult on the same basis as for casualties.

Difficult Children

Institutional accommodation—using empty houses or other suitable premises, with a staff experienced in child guidance—is desirable for those evacuated children in whom difficulties of behaviour make them unacceptable in ordinary billets. A register of persons experienced in child guidance work and a clearing house for information on cases to which medical officers and social workers can apply is being prepared by the Mental Health Emergency Department, 24, Buckingham Palace Road, London, S.W.1. If the local education authority of the evacuation area agrees, these "difficult" children may, if necessary, be sent to suitable special schools which are able to admit such cases.

Day or Residential Nurseries

In many cases it may be necessary to provide short-stay nurseries for young children during the lying-in period of the mother or when she is ill. The home should not have more than twenty-five children and preferably fewer, and should be in the charge of a matron who is a State-registered nurse. Long-term residential nurseries will also be necessary for children separated from their mothers for longer periods. Infants under 9 months should not ordinarily be admitted, and the number of resident children should not exceed thirty-five, preferably fewer. Detailed advice is given in the circular on the size, equipment, and management of these nurseries.

Provision should be made, it states, for the medical supervision of all children on admission to the nursery and for their examination when necessary. The medical officer, who should act under the general direction of the medical officer of health, should visit the nursery at frequent intervals and be available at other times in case of emergency, and should be generally responsible for arrangements for the feeding and health of the children.

B.M.A. SCHOLARSHIPS

At a meeting of the Science Committee of the British Medical Association the reports of the Association's Visitors on the work of the Scholars for the year 1938–9 were received.

Ganglionic Sympathectomy in Achalasia of the Cardia

Dr. G. C. KNIGHT (Ernest Hart Scholar) has been contrasting the effects of pre- and post-ganglionic sympathetic section for the relief of artificially produced achalasia of the cardia. Previous experiments in 1933–4 had shown that the cardiac sphincter received a sympathetic nerve supply. Excision of both lateral sympathetic chains in the cat produced a patulous sphincter with increased peristalsis of the oesophagus. Stimulation of sympathetic nerve fibres accompanying the left gastric artery caused contraction of the sphincter, and denervation of these fibres again resulted in a patulous sphincter, demonstrating that part at least of the fibres from the lateral chains took a recurrent course from the cardiac plexus to reach the cardiac sphincter. Encouraging results followed the application of these findings to the treatment of experimental achalasia of the cardia resulting from bilateral vagal section, for it was shown that either lateral chain sympathectomy or coeliac sympathectomy relieved the obstruction at the cardiac sphincter. Coeliac sympathectomy was applied to the treatment of cardiospasm in man with conflicting results. In many cases the operation had no permanent effect, although immediate post-operative improvement was observed for periods up to six months (as indeed occurs after any treatment in some of these patients), and yet successes have been noted by Adamson, Telford, Learmonth, and McConnell. Coeliac sympathectomy alone may be an incomplete operation, and, since it is in any case a post-ganglionic section, some form of pre-ganglionic operation might produce better results by avoiding adrenaline sensitization if this occurs in the alimentary tract. The present investigation was directed to elucidate these points: (A) By contrasting the effect upon the cardiac sphincter studied by x rays at one, three, and six months' intervals of certain surgical procedures, the results showing that whereas bilateral vagotomy produced a picture of achalasia, in one case recovery occurred spontaneously after five months of partial obstruction, and that the immediate effect of complete bilateral thoracic sympathectomy remained for three months subsequently, but then disappeared, the sphincter regaining its tonus. It seemed that the sympathetic supply to the lower part of the oesophagus came mainly from below the level of the fifth thoracic ganglion; the effect of pre-ganglionic sympathectomy upon the cardiac sphincter was less striking than that of total sympathectomy, but five months after the operation there was still increased peristalsis and a more rapid passage through the sphincter, whereas in total sympathectomy the effect was already weakened. (B) By fourteen acute experiments to try whether an accurate localization of the site of outflow to the cardiac sphincter could be obtained by stimulation of the lateral thoracic chains, and whether any evidence of adrenaline sensitization could be detected in animals previously treated by bilateral thoracic sympathectomy or pre-ganglionic sympathectomy. The conclusions were that the effect of bilateral vagotomy was not necessarily permanent; that pre-ganglionic section appeared to have a more permanent effect upon the oesophagus than complete sympathectomy; and that there was no evidence of a sympathetic supply to the lower oesophagus in the cat leaving the lateral chain above the level of thoracic V. This last point was in accordance with the recent findings of Mitchell, and it might be advisable later on to study the effect upon the human cardia of paravertebral novocain injections of the lower thoracic ganglia. A series of experiments to determine the effects of stimulation at different levels in the hypothalamus on respiration showed that stimulation of the anterior hypothalamus might produce apneustic respiration, complete inhibition, or decrease in rate with increase in depth. Stimulation of the posterior hypothalamus might give rise to acceleration of respiration with decrease in depth. After the administration of curare a rise of endotracheal pressure occurred, evidencing an increased resistance of the lung to distension (1) during actual stimulation of the hypothalamus; (2) as a prolonged and gradual rise following stimulation; (3) in certain cases a transient rise occurred immediately after the injection of curare; and (4) a rise of endotracheal pressure immediately before death due to congestion of the lungs. No such rises were noted in the control animals. The increased resistance was most probably located in the bronchial musculature, and brain sections are being investigated to determine the site of the brain lesions.

The Association's Visitor, Professor F. R. Fraser, remarked that this scholar had made good use of his time and opportunities; he had cleared up some of the problems he had set out to solve; and, even if it was disappointing that his work did not indicate how sympathectomy might be utilized in the treatment of cardiospasm, he had made a real contribution to knowledge. His work on the effect of stimulation of the hypothalamus was an endeavour to throw light on the occurrence of respiratory failure following operations in this area. The work was done in the laboratories of the Royal College of Surgeons.

C.S.F Pressure in Health and Disease

Dr. A. M. Barry (Walter Dixon Memorial Scholarship) has been investigating in the laboratories of the National Hospital, Queen Square, the cerebrospinal fluid pressure and volume in both health and disease, with special references to the connexion between raised C.S.F. pressure and papilloedema, focusing attention upon cerebral tumour, hydrocephalus, and arterial hypertension. Professor Fraser states that Dr. Barry found it first necessary to determine the compressibility of brain tissue and had devised an apparatus for this purpose. He had found that the compressibility of brain tissue was approximately the same as that of water. This work had been carefully and critically performed, and would probably form part of a report on studies on intracranial pressure by Dr. Carmichael when the work had been completed. Following this, he had taken part with Dr. Carmichael in investigations of vasomotor reflexes from the rectum and duodenum and involving estimation of the velocity of impulses in the involuntary nervous system. This work involved the devising of complicated apparatus to give quantitative estimations of very small differences in time. Forming a part of larger problems which are being investigated in the department, the complete report will be published in due course by Dr. Carmichael.

Gastroscopy in Diagnosis

Dr. H. Taylor (Ordinary Research Scholarship, renewed) has been working in the wards and operating theatres of the London Hospital. As regards the general availability of gastroscopy when indicated in gastric cases he reported 282 successful results out of 300 attempts. Out of 350 cases of definite established carcinoma of the stomach 10 per cent. had been diagnosed by gastroscopy before the operation. In seven instances two or more examinations were necessary, a new approach to the early diagnosis of carcinoma being thus made—namely, by observing the changes in the appearance of the lesion in early cases with the lapse of time. The prognosis in these early cases is better than in the general group of carcinomas of the stomach, so that this test for malignancy might be expected to improve the proportion of successful operations. In these seven cases carcinoma would not have been diagnosed without gastroscopy; two were found to be inoperable, and in the remainder gastrectomy was successfully undertaken. A comparison was also made of the degree of hyperplasia, gastritis, and acidity. In a group of 89 cases, 39 had mucosal hyperplasia with gastritis but no ulcer in the stomach; 31 had hyperplasia and gastric ulceration; while 19 had gastric ulceration without hyperplasia. No certain relation was defined between the effect of gastritis on the acidity and in the various types of mucosal hyperplasia.

Professor Fraser remarks that his last finding suggests that test meals are of little value as an indication of the state of the mucosa in individual cases. The most important practical results of these researches in Professor Fraser's opinion relate to the diagnosis of carcinoma at stages in which *x*-ray examinations are not conclusive. Professor Fraser adds: "Dr. Taylor has accomplished a very satisfactory amount of work which is likely to lead to earlier diagnosis of gastric carcinoma. The value of his observations on hypertrophic states of the mucosa in relation to peptic ulceration cannot yet be evaluated, but they should form a valuable basis for further investigations. His work will form the subject of a Hunterian Lecture to the Royal College of Surgeons."

Vascularity in Relation to Radiosensitivity of Neoplasms

Dr. J. B. Gaylor (Ordinary Research Scholar) has been studying in the Gardiner Institute of Medicine the problem of assessing the vascularity of neoplasms by physical means. As a first approach the vascularity of the skin was studied as being the tissue most easily observed experimentally. The index of blood flow provided by temperature readings as measured by thermal junctions was studied during full constriction up to full dilatation of the vessels. The gradient of rise of temperature produced by a constant stimulus of heating indifferent limbs was observed in a large number of normal and abnormal subjects. As a result of these observations the study yielded interesting incidental findings on the general subject of peripheral vascular disease. It is hoped to extend these observations and to correlate them with the results of plethysmographic experiments which will be made when further special recording apparatus has been installed. With this basis of experimental observations the data obtained will be applied to the study of the skin in sites of very different vascularity. The Association's Visitor, Professor J. W. McNee, has cordially approved the way in which the research is progressing in this and the following cases.

Muscular Hypotonia after Surgical Operations

Dr. J. D. Olav Kerr (Ordinary Research Scholar) has been working also in the Gardiner Institute of Medicine, where animal experiments on muscular tonus proved promising, as reported in these columns last year (*Supplement*, 1938, 2, 191). He states that during the current year muscular hypertonia has been studied in man following surgical operations and in acute medical illnesses. The influence of certain anaesthetics on muscular tonus was noted, and observations were conducted on the effect of strychnine in combating hypotonia. The collection of a sufficient number of cases to justify conclusions being drawn is taking longer than was expected, and no paper has yet been presented for publication.

Professor J. W. McNee, endorsing this statement, announces also that it is proposed by Dr. Olav Kerr that this investigation, when completed, shall be followed by experimental work in connexion with a study of the comparative anatomy of the heart, with special reference to the coronary vessels and conducting system.

Bacteriology of Skin Diseases

Dr. Beatrice Lewis (Ordinary Research Scholarship, renewed), continuing her work last year in the laboratories of the department of bacteriology at University College Hospital, has studied ninety-eight strains of *Staphylococcus pyogenes aureus* and nineteen strains of *albus*, obtained from skin lesions, systematically from the point of view of biochemical reactions, behaviour on gentian-violet agar, coagulase and haemolysin production, and reactions with various strains of staphylococcal bacteriophages. In more than ninety of these ninety-eight strains of *aureus* there was agreement between the results obtained by these methods in that mannite was fermented, the Vosges-Prokauer reaction was positive, a violet or deep orange-coloured growth was seen on gentian-violet agar, coagulase and haemolysin were produced, and the strains were sensitive to the five strong *Staphylococcus aureus* bacteriophages used, but were only slightly sensitive, or even unaffected, by the three weaker strains of bacteriophage employed. Work is proceeding on the preparation of rabbit sera against several of the strains in order to compare agglutination reactions with the previously mentioned results. Some further work has also been done on the serological typing of haemolytic streptococci obtained from skin lesions. It has been found possible to type only 22 per cent. of these strains so far, despite repeated attempts, modifications of the technique, including the use of Griffith's salts and also sera prepared from untyped strains. Professor Fraser remarks that this investigation has involved much laborious and time-consuming work since much repetition was necessary, and the bacteriophages obtained from Australia required to be passaged repeatedly, until a standard of activity was obtained, before they could be used for testing.

Correspondence

Petrol for Doctors

SIR,—In the *Supplement* of September 30 (p. 191) I note the statement that Divisional Petroleum Officers have been instructed to place medical practitioners in the highest category of priority in issuing supplementary petrol rations. If this is correct I hope we shall see a more generous allowance meted out to us for the second rationing period beginning on October 23 next.

In my own case, which I imagine is typical of that of other general practitioners, my total allowance of petrol for the thirty days September 23 to October 22, comprising (1) a completely full tank (unrationed) at the start, (2) the basic ration, and (3) the supplementary ration, will enable me to do an average daily distance of twenty-two and a half miles, in spite of the fact that I stated that my average daily mileage during the last year was practically thirty-nine for all purposes—the actual figure is 1,161 miles per month.

I think it is a fair assumption that by using the car solely for professional purposes the mileage will be immediately cut down by a quarter. This would put my average at thirty miles daily on professional work alone. My practice is in a neutral area, and although a large number of people have gone away it seems that numbers are already returning, so that I do not anticipate a really large falling off in the amount of work to be done in the winter, although this is certain to be less than the average. This area is an urban district of considerable size, and I have frequently done as much as forty-five to fifty miles a day during the winter months, using the car solely for professional purposes. If for the second rationing period beginning on October 23 I am allowed the same quantity of petrol, I shall only have enough to do an average daily distance of seventeen and a half miles, as in this case I shall not start the period with a full unrationed tank.

I am quite prepared to do visits near my home on either my feet or a bicycle, but it is impossible to do this if there is a large maternity bag or anaesthetic apparatus to carry, or in very bad weather. To expect one to cut down the mileage by over one-half appears to be altogether unreasonable, and if this happens it will be almost impossible to carry out even the contractual obligations to panel patients alone, apart from private practice. I sincerely hope that we shall not look in vain to the B.M.A. to press this matter very strongly. One hears from various—presumably reliable—sources that there is at present no prospect of any petrol shortage in this country, particularly with pleasure motoring now almost non-existent, and it might be a serious thing if the community were unable to obtain medical attention when required.—I am, etc.,

Coulsdon, Surrey, Oct. 1. R. B. P. LANSDOWN.

Remuneration and Grading in the Emergency Medical Service

SIR,—It is reported that in the House of Commons on September 13 the Minister of Health denied an allegation that dissatisfaction exists concerning methods of payment for the Emergency Medical Service. He seems to have overlooked the indisputable fact that certain people are to receive payment while others are not. For example, enrolment forms which were sent some time ago to various whole-time medical officers in voluntary hospitals have now been cancelled without explanation. In the case of my own radiological appointment no official recognition of any description has been received. It seems, therefore, that in common with other individuals in similar circumstances I am expected to deal with air raid casualties gratis. Lastly, certain radiologists enrolled for part-time hospital service are being offered terms applicable to general practitioners. Apparently the Ministry of Health is of the opinion that radiologists do not "rise to the dignity of specialists."—I am, etc.,

Wakefield, Sept. 28. JOHN A. G. F. ROSE.

*** The Ministry of Health has decided not to recruit to the Emergency Medical Service and so remunerate from Government sources practitioners holding whole-time voluntary hospital or local authority hospital appointments. On the second point, that of the grading of Class B officers, the Ministry has agreed to review the grading of these officers in the light of the observations of the Central Emergency Committee of the B.M.A. The lists are now being overhauled, and appropriate recommendations for regrading are being made to the Ministry of Health.—ED., *B.M.J.*

Certificates of Incapacity in War Time

SIR,—In every insurance practice there are a number of patients to whom the doctor is required to issue a certificate of incapacity once a month. In many such cases—elderly osteoarthritics and the like—this certificate is a pure formality, but in peace time the necessary visit to issue the certificate, whether undertaken by patient or doctor, is looked upon only as an irksome part of the day's work. In time of war, however, and particularly in country districts, it becomes a far more serious matter. The patient who should attend the surgery finds bus and train services enormously curtailed and the cost of local travel considerably increased. The doctor, on the other hand, has a limited supply of petrol, which he is asked not to waste.

In these circumstances could not the Ministry give insurance practitioners power to issue, say, quarterly certificates for those cases in which they are satisfied that more frequent attendances are only called for as occasion arises?—I am, etc.,

Perranporth, Oct. 2. DOUGLAS ROBB.

Postgraduate News

The Governing Body of the British Postgraduate School at Hammersmith has decided to carry on postgraduate instruction for the present.

A course of six lectures on the diagnosis and treatment of war neuroses (for general practitioners and others) will be given at the Tavistock Clinic (Westfield College, 8, Kidderpore Avenue, Hampstead, N.W.) on Monday, Wednesday, and Friday, October 16, 18, and 20, at 2.30 and 3.30 p.m. The fee for the course is 5s. (single lectures 1s.). Tickets are obtainable in advance from the educational secretary.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

General Meeting of Fellows.—*Tues.*, 2.30 p.m., removal from Roll and ballot for election to Fellowship.

Section of Radiology.—Fri., 2.30 p.m., discussion: Radiology in the War Emergency Services. Opener, Dr. A. E. Barclay, followed by Major D. B. McGrigor.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 26, Portland Place, W.—*Thurs.*, 4.30 p.m., Presidential Address by Sir Rickard Christophers, F.R.S.: Malaria in War.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck Street, W.—*Thurs.*, 4 p.m., Installation of President for 1939–40, etc.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.—Owing to present circumstances there will be no meeting of the Society in October.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this heading is 9s. This amount should be forwarded with the notice, authenticated by the name and address of the sender, and should reach the Advertisement Manager not later than the first post Tuesday morning to ensure insertion in the current issue.

DEATHS

SCORESBY-JACKSON.—On September 29, 1939, in Worthing, Margaret Scoresby-Jackson, M.D., elder daughter of the late R. E. Scoresby-Jackson, M.D., F.R.S.E., etc. The only intimation.

WHITESTONE.—Augustus Mayberry Whitestone (M.B., B.Ch., Trinity College, Dublin), at Beaufort House, Hollingbourne, Kent, on October 7, 1939, in his 83rd year.

SUPPLEMENT TO THE

BRITISH MEDICAL JOURNAL

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WAR NOTICES

Unaccompanied Children

It was announced in this column on October 14 that initial payments into the Unaccompanied Children Pools in the reception areas, covering the four-months period ending December 31, would be of an interim character. Such payments will represent three-quarters of the sum provisionally estimated to be due in respect of the period in question. Payments thereafter will be quarterly, and will in effect be made up in each case of a final payment for the preceding quarter and an interim payment for the quarter just ended. These arrangements have been made necessary by the present uncertainty as to the probable number of evacuated children, due on the one hand to further evacuation movements in certain cases, while in many instances evacuees have returned to their homes in considerable numbers.

Protection of Practices

The time is arriving when closing dates will shortly be named in most areas, after which no further signatures to protection of practices schemes can be accepted. While these dates will vary locally, it is probable that in a large proportion of areas the closing date chosen will fall within the next month. Practitioners who have not yet signed the protection of practices scheme operating in their areas are asked to take this step without delay in the interests of absentee practitioners and themselves. Clerical work will be greatly simplified if this is done in advance of the official closing date.

Petrol Rationing

As has previously been announced in these columns, the Divisional Petroleum Officers have been authorized to grant a second supplementary ration to medical practitioners who require more than the original allowance, and to consider, in consultation with the Petroleum Department in London, applications from practitioners who need still further supplies. There have been some complaints of delay in dealing with applications, but it appears that much of this has been due to failure on the part of medical practitioners to apply on the official form or to send registration books with the forms. The importance of following the procedure laid down is again emphasized.

The British Medical Association is continuing its negotiations with the Petroleum Department with a view to ensuring that in future all legitimate claims of medical practitioners will be dealt with reasonably and with all possible speed.

Steel Helmets at First-aid Posts

Hitherto the issue of steel helmets to medical practitioners attached to first-aid posts has been confined to the medical officers in charge of posts. The view of the Central Emergency Committee was that it was of importance that helmets should be issued to all practitioners holding first-aid appointments, and some weeks ago representations to this effect were made to the Ministry of Health. The Committee has now been informed that the Ministry hopes that a sufficient supply of steel helmets will be available to make a general issue possible on the lines suggested.

Intention of Service

Practitioners who wish to modify their previous statement of their intention of service are being asked to communicate their revised offer in conformity with the following classification:

(*a*) Men under 50 years of age available for whole-time service at home and abroad with the defence forces.

(*b*) Practitioners available for whole-time medical work with the civilian population in any area.

(*c*) Practitioners wishing to continue with the medical work in which they are now engaged.

As previously announced, any such statements of change of intention of service should be addressed to the Central Emergency Committee.

Central Emergency Committee
(Central Medical War Committee),
British Medical Association House,
Tavistock Square, W.C.1.

WAR WOUNDS AND AIR RAID CASUALTIES

On April 15, 1939, there appeared in the *British Medical Journal* the first of a series of articles on the "Treatment of War Wounds and Air Raid Casualties." A considerable number of these articles had formed the basis of lectures delivered in March at the British Postgraduate Medical School; they were followed by supplementary articles contributed by invitation, and the series will be brought to a close in next week's *Journal*. In response to many requests from readers all the articles will be republished in book form by Messrs. H. K. Lewis and Co., with a foreword written by the Director-General, Army Medical Services. The volume, uniform in size and shape with vols. i, ii, and iii of *Treatment in General Practice*, is due for early publication at the price of 10s. 6d. net.

CASUALTY EVACUATION TRAINS

AMBULANCES ON RAILS

Thirty-four casualty evacuation trains have now been equipped and commissioned to assist, in the event of air raids, the distribution of injured from the first-aid or clearing stations to the base hospitals. Twenty of the trains are stationed on sidings in and around the Greater London area, and the remainder are in the provinces or in Scotland. They are under the direction of the Ministry of Health (in Scotland, the Scottish Board of Health).

Each train, which is a quarter of a mile in length, consists of nine goods vans, normally used for the carrying of fruit, milk, or other commodities, which have been converted into stretcher ambulances. A van will take thirty stretcher cases, making a total of 270 on the train, with provision for a few sitting cases. The windows of these extemporized wards have been blacked out, but special provision has been made for ventilation, and with a clear space down the middle of the train a through passage of air is obtained, particularly when the train is in motion. Screens are provided in each ward for preventing draught.

Every inch of the floor has been scraped and polished with cardinal red, giving a very cheerful appearance. One could not have imagined that any railway rolling stock could be as spotless as these trains have been made. The stretchers, of metallic netting and painted a pleasant green, are fixed against each wall in three tiers, and are provisioned with blankets and pillows. The wards are lighted by electricity, but are also fitted with hurricane lamps, and the heat is distributed by steam pipes carried along the top of the vans. At either end of each ward are two folding canvas chairs, and there is a folding table which can be put up in the middle for dressings.

The most careful anticipation has been made of what an emergency may demand in medical equipment and supplies. One compartment is fitted with cupboards containing dressings, all in such a form as to be available on the instant; and immediately to hand there are drugs, disinfectants, styptics, and various medical comforts such as brandy, meat extracts, malted milks, lime juice, and—the universal English stand-by in shock or upset—tea. Gowns, aprons, and towels are all in readiness. One tray is filled with specially made torches for use should an air raid take place while the train contains casualties.

At each end of the train there is a small kitchen with oil stoves for making light meals and hot drinks. One compartment is fitted with large hot and cold water tanks, another is a repository for bed-pans, buckets and pails, and the like. The same equipment is repeated at each end of the train, one end being for nurses and the other for orderlies. A compartment is assigned to the medical and train officers and another to the sisters, and there are other compartments where the nurses and orderlies can rest or change their clothes, and an ex-dining car is used as a lounge and dining room. The staff, when not on duty, are accommodated in billets near where the trains are berthed.

The crew of each train consists of one medical officer, one train officer, three sisters, two assistant nurses, six auxiliary nurses, and eight St. John Ambulance orderlies. The whole of the staff is on duty all day, and two of the orderlies remain on duty all night. The whole train—there are two trains on each siding—is off duty one day a week, and on Saturday afternoons and Sundays two orderlies are left in charge, the remainder of the staff being within call. Of course, should bad air raids start the staff are prepared for duty twenty-four hours a day. The train which our representative visited "somewhere in London" included among its orderlies the manager of a gas company and a civil servant, and among the nurses an artist's model, a mannequin, and a private secretary. Although so far the trains have not had to be in action for air raid casualties, the staff are ready for the instant call.

At a time when so much, not unjustified, public grumbling is taking place at the railway service, it is well to record that at the outset of the emergency the railway companies were asked to furnish these trains on the Friday night, and they were in readiness on the following Monday. One may hope that, notwithstanding the care and thought spent upon them and the pitch of perfection to which they have been brought, the necessity for their use will never arise; but we understand that they are liable to be commandeered by the Army or Navy should there be pressure on other ambulance transport. A number of ambulance trains for use at home and over-seas for the transport of naval and military sick and wounded have been completed by British railways, and others are in construction at seven workshops in different parts of the country. Each of these trains, like those allocated for casualty evacuation, is fully equipped with cars to serve the purpose of wards and kitchens, and for the use of travelling staffs of nurses and doctors.

Assurance for Doctors

Cars used for Civil Defence

On September 2 a statement was issued by insurers on the use of cars for civil defence work which made provision for four weeks from the declaration of war. Although the position has not been further defined the period covered by that statement has been extended to October 31. At the same time certain concessions have been made, and the position within the United Kingdom is now as follows:

> Voluntary use of motor vehicles for civil defence will be regarded as coming within the scope of current policies of all kinds up to and including October 31, 1939. The policy will be deemed to have been extended to cover the liability of the civil defence authority using the vehicle without being endorsed for this purpose. The driver in such circumstances may be any person permitted by the policy, which, in the case of the normal private-car policy, includes any licensed driver driving with the permission of the owner. Where passenger risk is already covered by the policy this cover will continue to operate. In other cases application should be made to the insurer.
>
> It should be pointed out that this extension of cover does not override any clause in the policy which excludes the consequences of war, etc. The policy, therefore, would not apply to claims arising out of specific acts of the enemy or of the defence services.
>
> This announcement applies also to vehicles requisitioned or otherwise taken over by civil defence authorities, the policies on which will continue to apply subject to the limitations referred to above, and will be extended without endorsement to indemnify the public authority. It does not apply to any vehicle taken over by acquisition or by his Majesty's Forces.

Sir Duncan Wilson, H.M. Chief Inspector of Factories, has sent a message to the National "Safety First" Association welcoming its decision to maintain its industrial accident prevention work during war time. "The adverse effect of industrial accidents on national efficiency is probably even more pronounced in war time than in peace. For war purposes the nation's ability to produce goods and a fighting force depends ultimately on the sum total of people who can be mobilized to work and fight. During war time there will be many new factors all tending to increase the chances of factory accidents. There is the dilution of skilled labour by unskilled. Even more potent is the invasion of industry by adult workers who are not only unskilled but are totally unused to factory conditions. There are longer hours of work and intensified production; there is probably a greater amount of monotonous work. In the early days there will also be a certain amount of disorganization and reorganization due to change over of personnel and plant to meet new conditions. All these things have an adverse effect on the accident problem. Perhaps the most serious because of its universal occurrence will be the influx of the inexperienced into industry. This may be aggravated by lack of time to give as much individual instruction as is desirable. The implication is obvious. The educational side of accident prevention will have to be considerably intensified and propaganda will have to be much more widespread if avoidable accidents are not to have a serious effect on national resources."

Correspondence

Private Practice for Members of the E.M.S.

SIR,—Recently there has been considerable discussion and "grousing" in medical circles about the ban on private practice by whole-time consultants belonging to the Emergency Medical Service. None of the remedies put forward have been received with much favour, chiefly because no one wishes to imitate the dog in Aesop's fables and drop the small bone they hold for the large shadow seen in the water. I would like to suggest a possible compromise—namely, to allow practice at other hospitals and in private within a radius of twenty-five miles. If it was thought that this distance was too far for a surgeon to wander in case of an air raid, then the distance could be less or even restricted to the central hospital itself. The Government should not forget that one guinea out of every three-guinea fee goes to the income tax.—I am, etc.,

Middlesex, Oct. 12, 1939. MALCOLM DONALDSON, F.R.C.S.

Medical Care of Evacuated Persons in Reading

SIR,—With reference to the paragraph in the *Supplement* of October 7 (p. 195) on the medical care of accompanied children you may like to note for the information of other areas that the Reading Public Assistance Committee has made arrangements with the Borough of Reading Medical Society, Ltd., which is the Public Medical Service for the area, for free choice of doctor for all public assistance cases where visits at the patients' houses are necessary. A small part of the borough is excluded, as this is covered by a district medical officer. Payment will be on an attendance basis of 5s. a visit, including medicine and certificate, if necessary; attendance at surgery 3s. 6d., including medicine and certificate if necessary; and where a report or certificate which is not of a simple character is required of the relieving officer, an extra payment of 2s. 6d. The arrangement is for the period of the war and subject to three months' notice on either side. Free choice of doctor is given and medicines will be dispensed by the P.M.S.—I am, etc.,

W. I. BAIN,

Oct. 12. Hon. Secretary, Reading Division of the B.M.A.

Swabs by Post in War Time

SIR,—Half an hour after swabbing a throat at 2 p.m. on Saturday afternoon I took the specimen to the post office and found the next collection to be at 7 p.m. Consequently it will be Tuesday afternoon before I receive a report from the laboratory. There appeared to be no other method of delivery other than a personal visit to the public health laboratory five miles each way, which my petrol allowance and my time do not permit. Many practitioners must be faced with this problem, especially since the rationing of petrol, and I feel sure that it could be possible for such urgent missions to receive the consideration of a Sunday delivery in the interests of the public health.—I am, etc.,

Gatley, Cheshire, Oct. 14. D. L. COOKE, L.R.C.P. and S.

Petrol Ration and the Late Message

SIR,—On my form No. R(MS) 1 I have entered the following as one of my reasons for needing extra petrol: "The publicity given to the absolute necessity for people to send for their doctor early in the day has been so feeble as to be entirely negligible in its effect, and frequently one or more afternoon and evening visits have to be made over ground already covered to see people who could perfectly well have sent at the proper time had they bothered themselves to do so. The genuine emergency does occur, but it is comparatively rare."

The late visit is a great trial to the doctor, and may, in no small measure, account for the fact that, according to the Registrar-General's returns, the longevity of the doctor compares unfavourably with that of other professional men. The Ministry of Health and the multitude of insurance committees are always very anxious to see that the people get all the benefits to which they are entitled. Great pains are taken, by means of newspaper articles and slips inside the medical card, etc., to let them know what their doctor must do for them. There is not nearly the same enthusiasm in educating the people as to what they should do for their doctor. There is never by any chance the slightest amplification of the fact that it is their duty, if circumstances permit, to send for the doctor before 10.30 a.m.

Perhaps it is not too much to hope that the steps taken to effect a drastic economy in the use of petrol may, at the same time, benefit the doctor by reducing the number of his unnecessary calls out of hours.—I am, etc.,

Birmingham, Oct. 15. J. RENWICK.

Naval, Military, and Air Force Appointments

ROYAL NAVAL MEDICAL SERVICE

Surgeon Lieutenant (Emergency) F. Bush to be Surgeon Lieutenant Commander (Emergency).

ROYAL NAVAL VOLUNTEER RESERVE

To be temporary Surgeon Lieutenant Commanders: L. W. Mortimer and J. B. K. Smith.

To be temporary Surgeon Lieutenants: D. C. S. Rendall, D. Heap, and D. W. C. Cox.

ROYAL ARMY MEDICAL CORPS

Lieutenant W. G. Macfie to be Captain, with seniority May 1, 1938. (Substituted for the notification in the *London Gazette* of May 5, 1939.)

The appointment of Lieutenant W. G. Macfie has been antedated to May 1, 1937, under the provisions of Article 36, Royal Warrant for Pay and Promotion, 1931, but not to carry pay and allowances prior to May 1, 1938.

Lieutenant (on probation) J. D. Condon has been restored to the establishment.

To be Lieutenants: D. Paton, C. B. Armitt, J. R. Beagley, C. R. Barker, E. R. S. Phillips, J. G. Reid, I. M. Sandilands, R. S. Adam, J. A. W. Miller, A. W. L. Smith, R. M. S. McConaghey, A. L. Frazer, K. P. Pauli, E. W. Pickard, N. Walsh, T. M. Boog-Scott, R. C. Jenkinson, P. A. Robinson, T. E. Anderson, A. Henderson-Begg, N. Nicholls, P. O'Higgins, H. G. Page, G. F. D. Perrott, P. B. Riley, H. M. Kelsey, W. H. Jones, H. D. Moore, M. L. Mundy, N. H. M. R. Monro, W. R. Owen, A. P. Procter, W. S. Rees, A. G. Smith, J. Woodrow, T. B. Field, P. O'Driscoll, J. W. Perrott, B. S. Alderson, M. W. Allen, W. S. Baxter, T. P. Bliss, F. J. Henderson-Begg, H. S. Calder, A. H. Dickie, J. G. De Vine, I. Ferguson, T. C. N. Gibbens, W. G. Graham, A. A. Grierson, G. A. S. Harris, C. M. Heath, T. McLardy, W. M. Owen, A. R. Reid, T. D. Ross, R. Woodrow, L. Herbert, J. W. Maycock, A. H. R. Champion, P. Noel-Hanson, N. A. Lawler, J. W. M. Leslie, P. C. F. Wingate, J. M. Brown.

ROYAL AIR FORCE MEDICAL SERVICE

The following Flying Officers to be Flight Lieutenants, with seniorities indicated in parentheses: L. L. Ingram (April 1, 1938), J. I. M. Smith (May 2, 1938), H. P. R. Smith (May 6, 1938), W. G. Holdsworth, J. L. Roche, J. F. MacCarthy, H. Ll. Jenkins, and P. A. O'Callaghan (September 5, 1938), W. A. T. Hill (March 5, 1939), C. W. Wollaston, and J. E. Dalton.

A. G. Burke has been granted a short service commission as Flying Officer for three years on the active list, as from September 4, 1939, and with seniority of September 4, 1938.

ROYAL AIR FORCE VOLUNTEER RESERVE: MEDICAL BRANCH

To be Squadron Leaders: J. C. Ainsworth-Davis and R. R. Trail.

To be Flight Lieutenants: G. Gray and D. J. Williams.

To be Flying Officers: R. J. Healy, D. D. Reid, J. A. Sinclair, and J. Sutcliffe.

R. T. Goodyear, D. E. Price, A. B. MacGregor, N. S. Taggart, D. A. P. Anderson, and R. Carpenter have been granted commissions as Flying Officers for the duration of hostilities.

AUXILIARY AIR FORCE: MEDICAL BRANCH

T. D. R. Aubrey to be Flight Lieutenant.

To be Flying Officers: E. C. Dayus, G. H. Duthie, H. J. Harcourt, J. G. Connell, and A. L. Cowan.

REGULAR ARMY RESERVE OF OFFICERS

ROYAL ARMY MEDICAL CORPS

Lieutenant A. M. Bennett, from Reserve of Officers, the Queen's Regiment, to be Lieutenant, with seniority November 8, 1938.

COLONIAL MEDICAL SERVICE

The following appointments are announced: W. M. Howells, M.B., Ch.B., D.P.H., Deputy Director of Medical Services, Gold Coast; F. R. Lockhart, M.B., Ch.B., Senior Medical Officer, Kenya; F. S. Paterson, M.B., Ch.B., Senior Medical Officer, Sierra Leone; D. A. Skan, M.R.C.S., L.R.C.P., Pathologist, Nyasaland; G. L. Broderick, M.B., B.Ch., and W. A. L. Tucker, L.R.C.P. and S.Ed., Medical Officers, Uganda; G. A. Burfield, M.B., B.Ch., Medical Officer, Northern Rhodesia; J. A. Crocket, M.B., Ch.B., Medical Officer, Gold Coast; E. W. R. Hackett, M.B., B.Ch., Medical Officer, Hong Kong; R. B. Heisch, M.B., B.Ch., Medical Officer, Kenya; W. Mullen, M.B., Ch.B., Medical Officer, West Africa; H. T. H. Wilson, M.R.C.S., L.R.C.P., Medical Officer, Tanganyika Territory.

The Library of the British Medical Association will be open from 9.0 a.m. to 5.0 p.m. (1.0 p.m. Saturday) until further notice.

British Medical Association

OFFICES, BRITISH MEDICAL ASSOCIATION HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

Addresses, etc.

SECRETARY (Telegrams: Medisecra Westcent, London).

EDITOR, BRITISH MEDICAL JOURNAL (Telegrams: Aitiology Westcent, London).

SUBSCRIPTIONS. ADVERTISEMENTS, etc. (Telegrams: Medisecra Westcent, London).

Telephone number of British Medical Association and British Medical Journal, Euston 2111 (internal exchange, six lines).

SCOTTISH SECRETARY: 7, Drumsheugh Gardens, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 24361 Edinburgh.)

Cumann Doctúirí na h-Éireann (I.M.A. and B.M.A.): 18, Kildare Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 62550 Dublin.)

Diary of Central Meetings

OCTOBER

20 Fri. Journal Board, 11.30 a.m.

Areas of Stockport and Macclesfield Divisions

Notice is hereby given by the Council of the British Medical Association to all concerned that it is proposed to transfer the urban district of Cheadle and Gatley from the area of the Stockport Division to that of the Macclesfield Division.

Any member affected by this proposal and objecting thereto is requested to write to the Secretary of the Association by November 18, 1939, stating the objection and the ground therefor.

G. C. ANDERSON,
Secretary.

October 21, 1939.

Areas of Rochdale and Bury Divisions

With reference to the preliminary notice which appeared in the *Supplement* of September 2 (p. 171), notice is hereby given by the Council of the Association to all concerned that as from the date of this notice the municipal borough of Bacup is transferred from the area of the Rochdale Division to that of the Bury Division.

G. C. ANDERSON,
Secretary.

October 21, 1939.

Katherine Bishop Harman Prize

The Council of the British Medical Association is prepared to consider an award of the Katherine Bishop Harman Prize, of the value of £70, in the year 1940. The purpose of the prize, founded in 1926, is the encouragement of study and research directed to the diminution and avoidance of the risks to health and life that are apt to arise in pregnancy and child-bearing. It will be awarded for the best essay submitted in open competition, competitors being left free to select the work they wish to present, provided this falls within the scope of the prize. Any medical practitioner registered in the British Empire is eligible to compete. Should the Council of the Association decide that no essay submitted is of sufficient merit the prize will not be awarded in 1940, but will be offered again in the year next following this decision, and in this event the money value of the prize on the occasion in question shall be such proportion of the accumulated income as the Council shall determine. The decision of the Council will be final.

Each essay must be typewritten or printed in the English language, must be distinguished by a motto, and must be accompanied by a sealed envelope marked with the same motto and enclosing the candidate's name and address. Essays must be forwarded so as to reach the Secretary, to whom all inquiries should be addressed, British Medical Association House, Tavistock Square, London, W.C.1, not later than December 31, 1939.

Important Notice concerning Appointments

The attention of medical practitioners is drawn to the important notice concerning appointments which is published each week in the advertisement columns of the *Journal.* This notice asks practitioners to communicate with the Secretary of the British Medical Association before applying for any of the appointments listed therein. It appears this week at page 45.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

Section of Odontology.—Mon., 2.30 p.m. Presidential Address by Mr. S. F. St. J. Steadman: Condition of the Teeth in the Australian Aborigines.

Section of Orthopaedics.—Tues., 2 p.m. Paper by Dr. J. Trueta (late director of the department of surgery, General Hospital of Catalunya, Barcelona: Organization and Treatment of War Casualties. Members of the Sections of Anaesthetics, Medicine, Surgery, and United Services are specially invited to attend the meeting.

VACANCIES

EXAMINING FACTORY SURGEONS.—The following vacant appointments are announced. (*a*) Stanford-le-Hope (Essex); (*b*) Presteign (Radnorshire); (*c*) Handsworth (Yorkshire); (*d*) Abercrave (Breconshire); (*e*) Coleshill (Warwickshire). Applications to the Chief Inspector of Factories, Home Office, Whitehall, S.W.1, for (*a*), (*b*) (*c*) and (*d*) by October 24, and for (*e*) by October 31.

APPOINTMENTS

EXAMINING FACTORY SURGEONS.—H. G. B. Blackman, M.R.C.S., L.R.C.P., for the Wiveliscombe District (Somersetshire); G. D. Carter, M.R.C.S., L.R.C.P., for the Modbury District (Devonshire); Nancy B. Cox, M.R.C.S., L.R.C.P., for the Thame District (Oxfordshire); J. V. M. Davies, M.B., Ch.B., for the Shefford District (Bedfordshire); S. H. Martin, M.B., Ch.B., for the Nuneaton District (Warwickshire); F. W. Pringle, M.B., Ch.B., for the Moffat District (Dumfriesshire); H. J. C. C. Smith, M.B., Ch.B., for the Lauder District (Berwickshire).

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this heading is 9s. This amount should be forwarded with the notice, authenticated by the name and address of the sender, and should reach the Advertisement Manager not later than the first post Tuesday morning to ensure insertion in the current issue.

MARRIAGE

NICHOLSON-PIPER.—On Saturday, September 23, 1939, at St. Stephen's Church, Prenton, Birkenhead, by the Vicar, the Rev. Canon Briggs, Neville Jennings Nicholson, M.B., Ch.B.Ed., F.R.C.S.Ed., second son of the late Mr. and Mrs. George Nicholson, to Gwendoline Margaret Morton, elder daughter of Mr. and Mrs. H. V. Piper of Birkenhead, Cheshire.

DEATH

WALKER.—At Mqanduli, C.P., South Africa, on September 14, Patrick Hunter Walker, M.B., C.M.Glas., in his 82nd year.

SURGERY HOURS IN THE BLACK-OUT

The insurance committees of Manchester and Salford have agreed, after consultation with representatives of local panel and pharmaceutical committees, that chemists' shops in their areas shall close at 7 p.m. instead of 8 p.m. Practitioners are being urged, states the *Manchester Guardian,* to close their surgeries at the same hour, and also when visiting patients to issue prescriptions and certificates so far as practicable at the time of their visits. Insured persons are asked to co-operate by not making unnecessary demands on the services of the doctors, by attending, whenever possible, morning and afternoon surgeries, and by obtaining medicines from the chemists during the day time.

The third publication in the Ministry of Health's series of Emergency Medical Service Memoranda deals with the procedure to be followed by hospitals on the admission, transfer, discharge, or death of casualties, the provision of out-patient treatment, and the records that should be kept at each stage. This memorandum has already been circulated in typewritten form to medical officers of health, but this new issue contains some additions and amendments, including a revised copy of Form E.M.S. 105, which is the universal form of notification for all civilian casualties and Service and police casualties and sick admitted to hospital. Memorandum No. 3 may be obtained from H.M. Stationery Office, or through any bookseller (price 2d.).

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY OCTOBER 28 1939

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WAR NOTICES

Transferred Practitioners

The British Medical Association has recommended that where practitioners in evacuation areas whose practices have wholly or mainly disappeared as a result of evacuation are transferred under the Central Emergency Committee's arrangement to reception areas they should be paid by their employing practitioners at a salary of £550 per annum with £100 in lieu of emoluments. Such transferred practitioners are required to conform to the Protection of Practices schemes operating in the area from which they move and the area to which they are transferred, and to enter into an appropriate bond with the employing practitioner and the Local Emergency Committee of the reception area not to practise there after the war.

It is necessary to point out that the practitioners transferred under this arrangement are senior, experienced practitioners of special value in augmenting medical services in a reception area or in replacing a practitioner who has joined the Services. It is not intended that this rate of remuneration should necessarily govern all appointments in all circumstances, or that the usual channels for obtaining assistants should not operate as in peace time. Practitioners will, however, realize the importance of requiring *all* incoming general practitioners to enter into an appropriate bond, a copy of which can be obtained either from the Local Emergency Committee or from this office.

Unaccompanied Children Scheme

The following are some typical queries received at this office concerning the unaccompanied children scheme:

1. *Q.*—What is the definition of an "unaccompanied child"?

A.—An "unaccompanied child" is a child boarded by the Government with a householder who receives payment for board and lodging at the rate of 10s. 6d. or 8s. 6d. a child—that is, a Form A child. Typically this is a child who is not accompanied by a parent or guardian under the same roof. There are, however, a small number of children who are accompanied by parents who have been evacuated as helpers rather than as parents; these are "unaccompanied children" within the meaning of the scheme.

2. *Q.*—A number of children, blind or nearly blind, were evacuated from London to a Home for the Blind in a southern county. No arrangements had been made for their medical care, and it was asked whether the local Unaccompanied Children Pool would include payments in respect of these children.

A.—The Home is a residential school, certified by the Board of Education. As the London County Council has power to send blind children there and pay the appropriate approved fee to the Home, the medical practitioner concerned in treating the children should submit his account in the normal way to the Home. The Home, on its part, would no doubt recover the fees in the account to the evacuating authority.

3. *Q.*—Mentally defective children were evacuated from London to a neighbouring county in three different camps. Will the local Unaccompanied Children Pool include remuneration in respect of such children?

A.—The general arrangement of such cases has been for the camp commandant to draw the billeting allowances on Form A for the whole party of children at the camp. The cost of medical attention should be met from the local Unaccompanied Children Pool.

4. *Q.*—What is the position regarding medical treatment of evacuated unaccompanied children under 5 boarded in nursery schools?

A.—These children are regarded as Form A cases and their medical treatment would accordingly come within the Unaccompanied Children Pool arrangements.

5. *Q.*—How will the amount to be paid to the pools administered by Local Emergency Committees be calculated?

A.—This will be done by negotiation between the Ministry of Health and the Central Emergency Committee on the basis of returns collected by the Evacuation Department of the Ministry. A provisional payment in respect of the four months ending December 31 will be made to the Local Emergency Committees in the month of December. This payment will consist of 2s. 6d. for all unaccompanied children in the October count now being made—that is, three-quarters of the amount due on the basis of this count. The final payment for this four-months period will be made next quarter, when all the figures for the period are available and the Ministry of Health and the Central Emergency Committee have, on the basis of these figures, agreed the final amount due. Next quarter there will be paid, in addition to the final amount for the four months ending December 31, a provisional sum in respect of the current quarter. Similarly in the following quarter there will be paid the final amount in respect of the preceding quarter and a provisional amount for the current quarter. Thus, individual practitioners will receive payment at the end of December and thereafter at the end of each quarterly period.

6. *Q.*—Does the 10s. capitation fee cover hospital care?

A.—It covers general practitioner care, similar in scope to that rendered under the National Health Insurance Acts. The institutional care of unaccompanied children will be provided at hospitals under the Government's Emergency Medical Service.

CENTRAL EMERGENCY COMMITTEE
(Central Medical War Committee),
British Medical Association House,
Tavistock Square, London, W.C.1.

INSURANCE FOR MEDICAL WOMEN

BY

HENRY ROBINSON, M.D., D.L., J.P.

Honorary Secretary, Medical Insurance Agency

For those medical women who possess cars, own or occupy houses and flats, carry with them valuable property when they travel, or are thinking of purchasing an annuity with some or all of their capital, the advantages of doing their insurances through the Medical Insurance Agency are just as great as they are for medical men. These advantages were very fully set out last year in three articles published in these columns, a reprint of which can be obtained free on application to the manager of the Agency. Briefly, they are that when making use of the facilities offered by the M.I.A., which was founded in 1907 by Sir Dawson Williams and Sir Squire Sprigge, policies will be recommended only with first-rate companies (or, in the case of cars, underwriting groups); the contracts advised will ensure the maximum obtainable security compatible with competitive rates of premium; the free services of the Agency's expert managers are at disposal should any claim need to be put forward; and a substantial rebate of premium will be allowed to the insurer, thus reducing materially the cost of the insurance. The medical profession has during the past thirty-two years saved itself by such rebates over £100,000, which would otherwise have gone into the pockets of either the insurance companies or their agents, and has at the same time been the means of adding over £60,000 to the resources of the medical charities. It should perhaps be added here that the chairman of the Agency is Sir Humphry Rolleston; that no member of the Committee of Management is in any circumstances allowed to be remunerated directly or indirectly; that there are no shareholders; that the Agency is not itself at risk—it has no capital at all—but acts purely as honest broker; and that the interests of medical women have been safeguarded through their representation on the committee, first by Lady (Florence) Barrett, and then by Dame Barrie Lambert.

All this is, of course, no news to many medical women. It is repeated here in case there are some who have been hitherto unaware of it. But it will be observed that so far one or two of the most important aspects of insurance have not been touched upon, particularly life and endowment assurances in their protean forms. The problems which arise in connexion with these matters are no different in theory from those which confront medical men; but in practice the proportionate numbers of the two sexes for whom any particular type of assurance is the optimum do vary very considerably.

Women Doctors' Problems

When the requirements of a given medical woman's assurance happen to be the same as those of a given medical man, the advice of the Agency as to the best policy will, of course, be the same; but even then there are differences in the rates of premium which the offices charge for male and female lives, and these differences are wider in some companies than in others. But in a large number of cases the requirements of the medical woman are not the same as those of the (average) medical man, and it is in advising such clients as to the way in which their interests are best protected that the Agency renders to medical women a service which is quite unique. The justification of this claim is that the Agency is at pains not, as life assurance agents as a rule are, to promote the business of a particular office, but to give completely disinterested and unbiased advice conceived solely in the insured's interests.

When a medical woman has children or other dependants to protect her problems are not so very different from those of a similar medical man, except in so far as her husband's assurances and resources may relieve her of some or all of her responsibilities. It is, rather, the unmarried practitioner whose assurance needs are likely to require special consideration. There are, too, considerable differences between the problems set by those in private practice and those in permanent (usually pensionable) appointments.

The experience of the Agency shows that unmarried medical women in private practice tend to favour endowment policies maturing at earlier ages (commonly 50 to 55) than those most sought by medical men (commonly 60 to 65). It would seem that the majority of practising women contemplate the probability of retiring at earlier ages than men. No doubt the correspondingly heavier premiums required for the shorter dated policies are felt to be less of a drawback because of the (usual) absence of dependants. There is force in such reasoning when without profit policies are undertaken. But in the case of with profit endowment policies bonus accumulations are much less notable when the term set is less than twenty-five years compared with those accruing in the case of longer dated contracts, and unless the proposer feels quite certain that circumstances will not require continuance in practice beyond the ages above discussed it is probably wiser to take up endowment contracts for rather longer periods than most medical women embark upon—and, in addition, a given premium will assure a much larger capital sum at maturity.

Insurance for Salaried Officials

Whole life assurance has not been discussed, because to the proposer without dependants it is not of such importance or value; she who has them may be referred to the *Supplement* articles already mentioned. For the same reason there is no need here to dilate on the admirable combined pension, family income, and disability scheme fostered by the Agency some seven years ago and taken up on a very large scale by many medical men; it is fully explained in the same series of articles. The medical woman in a permanent pensionable post needs, however, in some cases special consideration. As in the case of men similarly employed, such practitioners have to contemplate superannuation at some given date—or often between certain limits of dates—on a pension considerably less than the salary hitherto enjoyed. They often feel that, as they do not need protection against early death (when they have no dependants), the normal endowment policy provides something—that is, cover against this contingency—which will not benefit them; and this attracts them towards policies assuring pensions beginning at the date when they expect to be superannuated. When such a policy is drawn in terms which mean that in the event of death before the pensionable age the company is freed of all liability—that is, retains all the premiums hitherto paid—it is clear that the premium quoted will be definitely cheaper than when return of premiums in the event of early death is included. This type of case raises very nice points of *pro* and *con*; for the argument as outlined above is often stultified by the fact that rebate of premiums for income tax purposes is allowed by the revenue only when there is an element of life protection: when an individual contract envisages a pension solely, the proposer is not eligible for this concession in respect of tax, which the new Budget has rendered more important even than it was before. It is on points such as this—and there are many others which space does not allow me to discuss—that the insurance experts who manage the Agency can be and are of the greatest help to intending proposers.

Sickness policies and annuities are two more branches of assurance on which expert guidance is most essential; and the Agency has a vast accumulated experience of these. Both medical women and medical men should fix firmly in their minds the principle that in their own interests they should take out no form of insurance whatsoever otherwise than through the organization set up to secure their protection—namely, the Medical Insurance Agency, B.M.A. House, Tavistock Square, W.C.1, and 6, Drumsheugh Gardens, Edinburgh.

The Secretary of State announces that he has withdrawn from Dr. Kenneth Rupert Tattersall of Plympton, South Devon, authority to be in possession of and to supply any drug or preparation to which the Dangerous Drugs Regulations, 1937, or any drug to which the Raw Opium, etc., Regulations, 1937, apply. Any person supplying Dr. Tattersall with any of the drugs or preparations to which these regulations apply, or supplying them on his prescription, will commit an offence against the Dangerous Drugs Acts.

HOW DOCTORS MAY SAVE PETROL

[From a Correspondent]

The restrictions on the use of petrol have fallen rather hardly on doctors, particularly as the initial allowances were so much below their necessary requirements. Now that larger rations are permitted there should be little difficulty in obtaining enough for the purposes of practice. In view, however, of the possibility of further restrictions in the future it behoves all practitioners to consider in what ways the consumption of petrol may be diminished. It is too much to expect that war, which has upset so many households and so much business, should not necessitate some alterations in the doctor's daily round and some personal sacrifices in the common cause.

A diminution in the amount of petrol required by a doctor may be brought about in three ways: by rearrangement of work, by the use of alternative methods of transport, and, in some cases where this is possible, by the use of a car which is more economical in petrol consumption. There are doctors who attend daily, sometimes several times a day, at surgeries which may be situated two or even three miles apart; in war time patients could hardly complain if the number of visits to any one surgery were diminished. One daily visit to each surgery could be made to suit most patients if it was made in the morning and evening on alternate days. While it is impossible to avoid the occasional urgent long-distance call, yet in the regular run of practice much petrol may be saved by systematically arranging to visit all patients in a distant part of a practice at one time. In some instances it might be possible to come to an amicable arrangement with another doctor, who might visit any special case which happened to be in his district.

Many doctors who appreciate the need for economy have already adopted alternative methods of transport. In urban districts they have found that a great number of near-by visits may be made on foot, while in certain suburban areas they have been wise enough to have recourse to a long-disused bicycle. In some parts, particularly in cities, buses and trams may often serve for certain journeys as well as or better than a car. There is little doubt that time as well as petrol may often be saved by making use of electric trains when crossing from one part of London to another. A special problem is raised by the patient who has removed to a distance and still wishes to be attended by the trusted doctor. It may be necessary to use the car, if no arrangements with a near-by doctor can be made, in areas which have no transport facilities, but it is difficult to see the need for a car when excellent train services are available. For example, any doctor in London who wishes to visit patients on the South Coast will find transport by electric train more speedy and as cheap as travel by motor car. In other cases long-distance bus services can easily be used as alternatives.

Some doctors possess two or more cars. Usually one of these is small and economical in petrol consumption, the other larger and more extravagant to run. With large bags or apparatus to carry the doctor may find the small car rather inconvenient for the exigencies of practice, but the discomfort might well be endured for the sake of saving petrol at the nation's need. Many doctors have as their only car one with a high horse-power, which will perhaps only travel ten or twelve miles per gallon of petrol. If they considered that saving of petrol was a national duty they might perhaps wish to acquire a smaller and more economical car for the duration of the war. The writer of this note has laid up a 24-h.p. car and bought a 9-h.p. one, which uses half the amount of petrol consumed by the larger vehicle. He has also (in the sixth decade of life) bought a bicycle, and finds that the new regime is rather exhilarating.

The Library of the British Medical Association will be open from 9.0 a.m. to 5.0 p.m. (1.0 p.m. Saturday) until further notice.

Correspondence

Remuneration and Grading in the Emergency Medical Service

Sir,—In your footnote to my letter in the *Supplement* of October 14 (p. 206) it is stated that the Ministry of Health has decided not to "remunerate from Government sources practitioners holding whole-time voluntary hospital or local authority hospital appointments." It is perhaps unnecessary to point out that while the latter are already, in effect, Government employees, and as such are liable to obey orders, the former are not. This leads to two questions: (1) By what right can the Ministry demand that voluntary hospital medical officers shall attend air raid casualties without payment? (2) Whether it is compulsory to perform such work under existing agreements. It must not be forgotten that the salaries received for certain voluntary hospital appointments are already inadequate. I submit, Sir, that this decision, making as it does an invidious distinction between different branches of the profession, is entirely unsatisfactory. In case I should be accused of a mercenary attitude let it be said that I am fully prepared to give my services without payment provided everyone else does the same. The views of others on this subject would be interesting.—I am, etc.,

Wakefield, Oct. 18. John A. G. F. Rose.

A Generous Action

Sir,—I have received the following letter which I am confident will have the sympathetic approval of your readers.

RUTLAND PANEL COMMITTEE

Dear Sir,

At its meeting to-day the Rutland Panel Committee decided to abandon its annual dinner usually held in November. It was felt that the money usually spent on this function should be devoted to medical charities, and in view of the many claims on the Royal Medical Benevolent Fund, and its probable drop in income from high taxation, the committee has asked me to send you a cheque for fifteen guineas, the approximate sum we usually spent on our dinner.

Yours faithfully,
(Sgd.) Gordon Purdy,
Hon. Secretary.

As honorary treasurer of the Fund I would like to state how greatly the committee appreciates not only the generous action but also the spirit which underlies the gift. May I suggest, therefore, that the example of the Rutland Panel Committee is one which might well be followed by other committees or clubs of every variety when an occasion arises.—I am, etc.,

Lewis G. Glover,
Honorary Treasurer, Royal Medical Benevolent Fund.
Wormingford Grove, Wormingford, Essex,
Oct. 23.

The Children's Nutrition Council (formerly the Children's Minimum Council) has decided that its work shall continue during war time. It is considered that with war control of foodstuffs it is more than ever necessary to have an organization that can consider the best means of using the existing social services to ensure that children and their mothers are being adequately nourished. Further, the council is concerned with the adequacy of children's allowances under the many different regulations covering the families of soldiers, the unemployed, and other sections of the community, and will press for an increase where the allowances are too low to ensure an adequate standard of nutrition. It urges the establishment of community centres for the feeding and social life of both evacuated persons and the normal population in reception areas, the provision of midday meals for *all* school children in such areas, and the adoption of or extension of existing schemes for free and cheap milk. The address of the Council is 72, Horseferry Road, S.W.1.

Naval, Military, and Air Force Appointments

ROYAL ARMY MEDICAL CORPS

Colonel F. T. Rees, M.C., has relinquished his commission and retains his rank with permission to wear the prescribed uniform.

Major N. W. Hammer has relinquished his commission and retains his rank with permission to wear the prescribed uniform.

Majors F. D. Marsh, M.C., A. O. Bekenn, and R E Holme, from Territorial Army Reserve of Officers, R.A.M.C., to be Majors.

Captain H. Miller, from Territorial Army Reserve of Officers, to be Captain.

Captain W. G Bisset has relinquished his commission.

Lieutenants R. R. Davies, P. D. Stewart (seniority October 22, 1938), H. M. S. G. Beadnell, and W Windsor to be Captains.

To be Captains: Captains J. Kerr, J. H. B. Livingston, D M. Mackenzie, K. M. Morris, E. F. S. Morrison, J. O'Donnell, T. H. Sansome, and R. A. M. Scott (from Territorial Army Reserve of Officers, R.A.M.C.), and Lieutenant J. A. Robertson, late R.F.A.

To be Lieutenants: A. W. F. Catto, G. Macpherson, T. A. Blyton, D. R. Beaton, W. O. Whittaker, H. Freeman, I. B. McCrae, P. C. A. Posford, C. W Horncastle, F. J. Fell (from Regular Army Reserve of Officers, R.A.M.C.), F. M. Halley (from Territorial Army Reserve of Officers, and relinquishes rank of Captain), J. H. Hannan, J A. Hart, W. L. Petter, H. A. Constable, E. M. K. Jellicoe, J. A. Dunlop, D. W. Gillies, W. A. Heggie, J. H. B. Beal, G. D. Hadley, W. Chalmers D A. Brigg, I C. Robertson, R. W. W.-Brown, C. O. Barnes, W. Mayne, E. Whyte, Lieutenants D. L. Greig and C. W. F. Outred (from Territorial Army Reserve of Officers, R.A.M.C.), W N. Miller, E. J. M. Gallagher, and S. E. Gordon.

To be Lieutenants (on probation): H. F. L. Gallaher, W. MacK. McLennan, Captain G. E. Gray (from R.A.M.C., T.A.), H L. Connor, I. D. Paterson, I. W. H. Mansfield, R. S. McGeorge, D. G. Howatson, D A. Bird, C. D. Salmond, and D. B. Jagger.

Lieutenants (on probation) W. MacK McLennan and D. B. Jagger are seconded under the provisions of Article 213, Royal Warrant for Pay, 1931, from September 1.

REGULAR ARMY RESERVE OF OFFICERS

ROYAL ARMY MEDICAL CORPS

Captain T. S. Cave (from Regular Army Reserve of Officers) to be Captain, with seniority November 13, 1936.

Captain I. S. Thompson has resigned his commission.

Lieutenant A. H. Levers has resigned his commission.

L. W. H. Bertie, late Second Lieutenant, Special List, to be Lieutenant.

SUPPLEMENTARY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS

Captain A. H. L. Baker has resigned his commission

Lieutenant A. M. Critchley to be Captain.

To be Lieutenants: C. V. Oldroyd, R. Cox, H. S. Davis, T. J. Fairbank, D. P. Kearns, R. G. M. Longridge, W. M. Macleod, P H. Newman, I. N. Samuel, G. C. Steel F. R Store, and F. A. D'Abreu.

TERRITORIAL ARMY

Lieutenant-Colonel W. Leslie, M.C., from R.A.M.C., T.A., to be Colonel and A.D.M.S., 6th Anti-Aircraft Division, Territorial Army.

ROYAL ARMY MEDICAL CORPS

Lieutenant-Colonel and Brevet Colonel D. W Boswell, T.D., has vacated the appointment of Officer Commanding, 3rd Eastern General Hospital.

To be Majors: Captain F. Roberts, R. W. Butler, L. B. Cole, R. Brooke, A. S H. Walford, and E. G. Recordon.

Captain H. C. M. Williams has resigned his commission.

To be Captains: Lieutenant F. A R. Stammers (late R.G.A., Special Reserve), Lieutenant J. F. Hinksman (late Border Regiment), Lieutenant W. R. Blunt (late R.G.A., Special Reserve), Second Lieutenant L. A. Ogg (late R.T.C.), E. V. Bevan, E. C. Campbell, W H. Lewis, L. W. Lauste, H. K. Ashworth, A. F. Alsop, R. L. Holt, E. Bulmer, E. G. Collins, A. R. Kelsall, D. E. O'C. Cuffey, T. D. Day, and Captain J. A. Tomb (from Territorial Army Reserve of Officers, R.A.M.C.).

To be Lieutenants: D. C. Langwell, J. H. Bolton, S. W. G. Hargrove, P. F. Evans, F. Elliott, J. Watson, J. H. Levack, D. W. Lacey, W. Michie, F. M. Newnham, J. Clark, G. H. G. Hope, H. R. Fosbery, J. A. R. Johnson, T. W. H. Porter, E. G. Wilbraham, K D. Moynagh, R. Pollock, L. G C. Pugh, and A. F. McDonald.

The notification regarding the appointment of Lieutenant E. V. Bevan in the *London Gazette* of May 12, 1939, has been cancelled.

TERRITORIAL ARMY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS

Captain S. C. Swinburne (late R.A.M.C., Special Reserve) to be Captain.

INDIAN MEDICAL SERVICE

Colonel D. C. V. FitzGerald, M.C. has retired from the Service.

Lieutenant-Colonel R. Clifford, D.S.O., M.C., has retired from the Service

The services of Lieutenant-Colonel M. M. Cruickshank have been placed permanently at the disposal of the Government of Madras, as from May 10, 1934.

The services of Lieutenant-Colonel A. C. L. O'S. Bilderbeck have been replaced at the disposal of the Defence Department, as from August 2, 1939.

The provisional promotion of Major S. M. Kharegat to his present rank has been confirmed.

Captain J. W. Richmond has retired from the Service.

Captain W. S. Morgan has been appointed an Agency Surgeon and posted as medical officer in charge of the Crown Representative's Police Force Hospital, Neemuch, as from August 20.

Captain R. I. Reid, on appointment to the Medical Stores Department as a temporary measure, has been posted as Deputy Assistant Director-General (Medical Stores), Medical Store Depot, Lahore Cantonment, as from August 15.

Captains (on probation) P. B. Cussack and N. P. Woodgate-Jones have relinquished their probationary appointments

Lieutenant (on probation) J. A. Anderson to be Captain (on probation).

Lieutenant (on probation) H. Rees has been restored to the establishment, with seniority May 1, 1938.

British Medical Association

OFFICES, BRITISH MEDICAL ASSOCIATION HOUSE,
TAVISTOCK SQUARE, LONDON, W.C.1.

Addresses, etc.

SECRETARY (Telegrams: Medisecra Westcent, London).

EDITOR, BRITISH MEDICAL JOURNAL (Telegrams: Aitiology Westcent, London).

SUBSCRIPTIONS, ADVERTISEMENTS, etc. (Telegrams: Medisecra Westcent, London).

Telephone number of British Medical Association and British Medical Journal, Euston 2111 (internal exchange, six lines).

SCOTTISH SECRETARY: 7, Drumsheugh Gardens, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 24361 Edinburgh.)

Cumann Doctúirí na h-Éireann (I.M.A. and B.M.A.): 95, Merrion Square, W., Dublin. (Tel.: 62550 Dublin.)

Branch and Division Meetings to be Held

HERTFORDSHIRE BRANCH : ST. ALBANS DIVISION.—At Wellington Court, Bricket Road, St. Albans, Friday, October 27, 9 p.m. Annual General Meeting Election of officers, etc.

Important Notice concerning Appointments

The attention of medical practitioners is drawn to the important notice concerning appointments which is published each week in the advertisement columns of the *Journal.* This notice asks practitioners to communicate with the Secretary of the British Medical Association before applying for any of the appointments listed therein. It appears this week at page 39.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

Section of Comparative Medicine.—Wed., 2.15 p.m. Presidential Address by Dr. C. H. Andrewes: Latent Virus Infections, with Special Reference to Cancer. The address will be open to general discussion. All Fellows and particularly members of the Section of Pathology are invited to attend.

Section of Otology.—Fri., 10 a.m. Presidential Address by Dr. T. Ritchie Rodger: Syphilis as seen by the Aural Surgeon. A discussion will follow.

Section of Laryngology.—Fri., 2.30 p.m. (Cases at 1.30 p.m.). Presidential Address by Mr. T. B. Layton: Clinical Rhinology. Cases will be shown.

Section of Anaesthetics.—Fri., 2.30 p.m. Presidential Address by Dr. Harold Sington: Yesterday and To-day in Children's Anaesthesia.

VACANCIES

MEDICAL REFEREE UNDER THE WORKMEN'S COMPENSATION ACT, 1925, for the County Court Districts of Bromley and Sevenoaks (Circuit No. 56). Applications to the Private Secretary, Home Office Whitehall, S.W.1, by November 16.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this heading is 9s. This amount should be forwarded with the notice, authenticated by the name and address of the sender, and should reach the Advertisement Manager not later than the first post Tuesday morning to ensure insertion in the current issue.

MARRIAGE

KEERS—LOCKIE.—At the High Kirk, Dunoon, on September 29, 1939, by Rev. G. Charles Smith, M.C., M A. Robert Young Keers, M.D., son of Rev. William and Mrs. Keers, Newbliss, Co. Monaghan, to Jessie Cameron, elder daughter of the late Major Andrew Lockie and of Mrs. Lockie, Ranikhet, Dunoon, Argyll.

DEATH

ROBB.—On October 16, 1939 (suddenly), at 13, Wake Green Road, Moseley, Birmingham (the residence of his sister) William Hunter, M.B., C.M.(Edin.), in his 64th year. Interred at Caerlaverock, Dumfries, on October 20, 1939.

Corrigendum

Wing Commander A. J. Brown, D.S.O., M.R.C.S., L.R.C.P., is a Hospital Officer of the Ministry of Health, not a Deputy Hospital Officer as stated in the *Supplement* of October 14 (p. 202).

SUPPLEMENT TO THE

BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 4 1939

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WAR NOTICES

Emergency Medical Service

It will be recalled that in July the Central Emergency Committee, at the request of the Ministry of Health, put forward specific proposals for the terms and conditions of service of an Emergency Hospital Medical Service. It was recommended that there should be two types of appointment within the Service: a Class A or whole-time appointment, and a Class B or part-time appointment. It was further recommended that an establishment of Class A officers should be laid down by the Ministry. In general the Ministry accepted the Committee's recommendations, modifying those relating to salaries but not embodying a proposal that special rates of compensation for death or injury should be paid or the recommendation that a Class A establishment should be laid down.

Recruitment to the Service was then undertaken by the Ministry of Health, with the result that about 2,000 practitioners, apart from house officers, were enrolled in the London area, over two-thirds of them on a whole-time basis. In the provinces over 3,000 practitioners were enrolled, comparatively few of them being on a part-time basis. It was not long before the hurried recruitment of whole-time officers without a fixed establishment led to difficulties in London. Some whole-time officers enrolled in the belief that they could at the same time continue in private practice. Others, enrolled but not called up at the outbreak of war, complained that their private practices had disappeared. Some attended their hospitals at the outbreak of war under a misapprehension.

In order to meet a part of the problem the Ministry offered whole-time officers officially called up the opportunity of transferring to a part-time basis, remaining liable for four-sevenths of their time and receiving one-third of their whole-time salary. This offer was acceptable to few and the situation remained practically unchanged. Difficulties arose, too, in connexion with house officers, some of whom, although enrolled, were informed by the Ministry that they were enrolled in error. In the part-time B section difficulties were beginning to arise as to the interpretation of the section of the terms and conditions of service defining the range of professional work falling within the scope of the Service. There were other difficulties also as a result of the Ministry's grading of Class B officers into those undertaking consultant and specialist work and those undertaking general practitioner work.

At this stage the Central Emergency Committee decided to give immediate consideration to the position with a view to the preparation of a scheme of reorganization for recommendation to the Minister of Health. It established a special committee for the purpose, including the Presidents and representatives of the three Royal Colleges. The full personnel of the Committee was given by the Minister in answer to a question in the House of Commons and is set out in full in this *Supplement* at page 216. This committee, after collecting the views of the various groups affected, has now prepared a considered scheme for the reorganization of the Service, and it has asked the Minister of Health to receive a deputation in order that this scheme may be placed before him. It relates both to whole-time and to part-time officers. The Minister has consented to receive the deputation on Friday, November 3.

The General Practitioner and Air-raid Casualties

The Minister of Health has decided to establish on a temporary basis a domiciliary medical service for all civilians who sustain war injuries in this country if in-patient treatment is no longer necessary or is impracticable and treatment as an out-patient of a hospital is impracticable. In so far as the injured persons are entitled to medical benefit under National Health Insurance they are already provided for. The scheme will be available for dealing with the residue.

Service under the scheme will be confined to after-treatment of the war injury and to treatment within the scope of a general practitioner. The British Medical Association has agreed with the Ministry to use its best endeavours to secure that medical practitioners throughout the country will take part in the service as they have recently done in the case of the service for the medical treatment of unaccompanied children. Payment to general practitioners will be made on the basis of a capitation fee at the rate of 16s. per annum for each person attended under the scheme, this sum being exclusive of drugs and dressings.

The scheme is to be liable to reconsideration at the end of a year. It will cover one further small class of case, that of civil defence volunteers who sustain "war service injuries" as defined in the Personal Injuries (Emergency Provisions) Act, 1939.

This is a preliminary announcement and the fullest details will soon be made available to Local Emergency Committees and to individual practitioners.

Casualties in Rural Areas

A question has been raised as to the medical provision for attendance on casualties due to air raids in rural areas in which no fixed first-aid posts have been established. This matter has been taken up with the Ministry of Health, which replies as follows:

"It has not been found practicable to provide organized arrangements for providing medical attention for air-raid casualties other than those who are treated at first-aid posts (mobile or fixed) or hospitals. It will be appreciated that in the great majority of cases any necessary treatment can be provided through those agencies, and any system under which the private practitioners were called upon to give treatment would need to be subject to proper control. In any exceptional case, however, where medical services were required by a casualty who could not be treated through the organized arrangements, a claim for payment would receive special consideration in the event of the patient not being an insured person, or being unable to make his own arrangements for payment."

CENTRAL EMERGENCY COMMITTEE
(Central Medical War Committee),
British Medical Association House,
Tavistock Square, W.C.1.

EMERGENCY MEDICAL SERVICE

In reply to a question in the House of Commons on October 26, on the consultations that have taken place between the Ministry of Health and representatives of the medical profession concerning the terms and conditions of service in the Emergency Medical Service, Dr. Elliot circulated the following lists of personnel of the Central Emergency Committee (Central Medical War Committee), Group Officers, and a special committee appointed by the Central Emergency Committee on October 18. The first part of Dr. Elliot's reply will be found in "Medical Notes in Parliament" this week (*Journal*, p. 933).

CENTRAL EMERGENCY COMMITTEE (CENTRAL MEDICAL WAR COMMITTEE)

Chairman of Council: Mr. H. S. Souttar, London.
Chairman of Representative Body: Dr. H. Guy Dain, Birmingham.
Treasurer and Chairman of General Practice Committee: Dr. J. W. Bone, Luton.
Chairman of Naval and Military Committee: Colonel A. H. Proctor, London
Chairman of Public Health Committee: Professor R. M. F. Picken, Cardiff
Chairman of Welsh Committee: Dr. W. E. Thomas, Ystrad Rhondda, Glam.
Chairman of Insurance Acts Committee: Dr. E. A. Gregg, London.
Chairman of Rural Practitioners Subcommittee: Dr. D. G. Greenfield, Rushden, Northants.
Chairman of Hospitals Committee: Dr. Peter Macdonald, York.
Chairman of Organization Committee: Dr. J. C. Matthews, Downton, Wilts.
Chairman of Public Medical Services Subcommittee: Dr. H. W. Pooler, Ashover, Derbyshire.
Chairman of Special Practice Committee: Professor A. H. Burgess, Cheadle, Cheshire.
Representative of Society of Medical Officers of Health: Dr. James Fenton, Kensington.
Representative of Medical Women's Federation: Dr. Letitia Fairfield, London.
Representative of Medical Committee of House of Commons: Sir Francis Fremantle, Hatfield.
Representatives of following Group Committees:
  Radiological: Dr. Russell J. Reynolds, London.
  Pathological: Dr. D. Embleton, London.
  Ophthalmological: Mr. J. D. M. Cardell. London.
  Consultants and Specialists: Mr. A. Hedley Whyte, Newcastle-upon-Tyne.
  Psychological Medicine: Dr. A. A. W. Petrie, Sutton, Surrey.
  Physical Medicine: Dr. C. B. Heald, London.
  Orthopaedic: Mr. Harry Platt, Manchester.
Two Representatives each of: Royal College of Surgeons: Sir William Girling Ball, London; Sir Alfred Webb-Johnson, London. Royal College of Physicians: Dr. A. E. Clark-Kennedy, London; Sir Charles Wilson, London.
Representative of Royal College of Obstetricians and Gynaecologists: Professor W. Fletcher Shaw, Manchester.
Representative of Medical Research Council: Dr. P. N. Panton, London.
Four General Practitioners appointed by the British Medical Association on a territorial basis: Dr. J. A. Brown, Birmingham; Mr. G. E. Elkington, Newport, Shropshire; Sir Kaye Le Fleming, Wimborne; Dr. S. A. Winstanley, Urmston, Lancs.
Representative of Board of Education: Dr. J. Alison Glover.
Representative of Board of Control: Sir Hubert Bond.
Liaison Officer of Scottish Emergency Committee: Dr. R. W. Craig, Edinburgh.
Liaison Officer of the Northern Ireland Emergency Committee: Dr. F. M. B. Allen, Belfast.
Secretary (Dr. G. C. Anderson).
Deputy Secretary (Dr. Charles Hill).

Group Officers: London

Sector I.—Mr. Russell J. Howard.
" II.—Dr. A. E. Clark-Kennedy.
" III.—Sir Girling Ball.
" IV.—Dr. Wilfred Pearson.
" V.—Dr. H. E. A. Boldero.
" VI.—Sir Charles Wilson.
" VII.—Mr. C. H. S. Frankau.
" VIII.—Professor O. L. V. S. de Wesselow.
" IX.—Mr. John Hunter.
" X.—Professor T. B. Johnston.

Group Officers: Provinces

Birmingham.—Professor L. G. Parsons.
Liverpool.—Mr. K. W. Monsarrat.
Manchester.—Professor A. H. Burgess.
Sheffield.—Dr. A. G. Yates.
Leeds.—Mr. Harold Collinson.
Bristol.—Professor Hey Groves.
Newcastle.—Mr. F. C. Pybus.
Hull.—Dr. T. Ritchie Rodger.
Bradford.—Dr. J. F. Allan.
Stoke-on-Trent.—Dr. E. C. Myott.
Portsmouth.—Mr. B. Wagstaff, Secretary, Royal Portsmouth Hospital (with an advisory committee of four medical men).
Southampton.—Mr. E. L. Wirgman, Secretary of Royal South Hants and Southampton Hospital (with an advisory committee of four medical men).
Brighton.—Dr. L. A. Parry.
Wolverhampton.—Mr. W. H. Harper, House Governor, the Royal Hospital, Wolverhampton.
Walsall.—Dr. Robert Forrest.
Reading.—Dr. G. O. Lambert.
Oxford.—Major-General Sir Robert McCarrison.
Exeter.—Colonel R. Pickard.
Nottingham.—Dr. W. T. Rowe.
Leicester.—Dr. John P. W. Jamie.
Coventry and Warwick.—Mr. G. G. Alderson.
Derby.—Dr. F. G. Lescher.
Sunderland.—Dr. Paige C. Arnold.
Cambridge.—Professor J. A. Ryle.

Wales

Cardiff.—Dr. R. Armstrong.
Newport.—Mr. Alan Ruddle.
Swansea.—Mr. O. C. Howells.

Special Committee

Representing the Royal College of Physicians of London:
  Sir Robert Hutchison (President) Dr. H. L. Tidy.
Representing the Royal College of Surgeons of England:
  Mr. Hugh Lett (President), Sir Alfred Webb-Johnson.
Representing the Royal College of Obstetricians and Gynaecologists:
  Professor W. Fletcher Shaw (President), Dr. J. P. Hedley.
Representing the Group Officers:
  London:
    Sir Charles Wilson, Sir Girling Ball, Dr. H. E. A. Boldero.
  Provinces:
    Professor A. H. Burgess, Mr. K. W. Monsarrat, Professor L. G. Parsons.
Representing the Central Medical War Committee:
  Mr. H. S. Souttar (Chairman), Dr. H. Guy Dain, Dr. A. E. Clark-Kennedy, Professor R. M. F. Picken.
  Dr. G. C. Anderson (Secretary).
  Dr. Charles Hill (Deputy Secretary).
Representing the London County Council:
  Dr. W. A. Daley.
Attending by invitation:
  Sir Maurice Cassidy, Mr. R. M. Vick.

At a meeting with the Minister of Health (Dr. Elliot) on October 27 a deputation from the British Paediatric Association, which was introduced by Dr. Charles McNeil, professor of child life at Edinburgh University and physician to the Royal Sick Children's Hospital, Edinburgh, suggested: (*a*) that the Government should appoint a paediatrician to act as consultant or adviser to the Minister, just as consultants had been appointed for special work like facial surgery under the Emergency Medical Scheme; (*b*) the appointment of specialists in children's illnesses, who would, in co-operation with general practitioners and public health authorities, be responsible for the children in the receiving areas; (*c*) the allocation of special blocks of beds and the concentration on those beds of specially trained children's doctors and nurses for sick children in the receiving areas.

The Minister, in reply, said that the appointment of a consultant in children's illnesses was not analogous to the appointment of consultants on such things as facial surgery in the Emergency Medical Service, since the latter would deal with casualties caused by air raids, whereas the former would be dealing with ordinary illnesses and not injuries arising from raids. But while he would gladly consider their suggestions and particularly their offer to set up panels of specialists in the different emergency regions so that general practitioners in the reception areas might have the advantage of consultants' services, he doubted whether evacuation could properly be made the occasion for the institution of a new service not available in peace time. The evacuated children represented only a small proportion of the total child population of the country, and if a specialist children's service were to be made available as part of the public health services it would need to cover children generally and not merely those who had been evacuated.

Assurance for Doctors

Meeting the Premium on Life Policies

It is possible that, with increased taxation and, in some instances, reduced income, medical men may find it difficult, temporarily, to meet the premium on their life insurance policies, and may even go so far as to contemplate surrendering those life policies. Now more than ever before is it necessary to maintain life assurance protection at its highest level, and very careful thought should be given to the following suggestions before any decision is taken which means surrendering a valuable policy.

A life policy can be turned into a "paid-up" assurance, which means for practical purposes that the sum assured is reduced in the proportion that the number of premiums actually paid bear to the total number which would have been paid if the contract ran to maturity. This is a much better proposition than surrendering a policy, but it still means a reduction in cover.

Most companies have special regulations for assisting a policy-holder to keep his cover intact during temporary financial embarrassment, and this is generally done in one of two ways. First, there are "non-forfeiture regulations" whereby, if the policy carries a sufficient surrender value, the premium is automatically advanced by the company out of the surrender value, and the policy-holder merely pays interest on the premium so advanced and is at liberty to repay this premium at his convenience. The procedure can be prolonged while the surrender is sufficient for the purpose. Secondly, a loan, where the surrender value justifies it, which is sufficient to pay the premium outstanding can be obtained from the company, at interest, on the security of the policy, and this loan can be repaid later or remain a charge on the policy to be deducted from the moneys due at maturity. Both these methods have the great advantage of keeping the cover at its full value and also of retaining in force a contract which, if surrendered or paid up, cannot perhaps be reinstated, for medical or other reasons, when desired.

Naval, Military, and Air Force Appointments

ROYAL NAVAL MEDICAL SERVICE

Surgeon Captain F. C. Wright has been placed on the retired list.

Surgeon Lieutenant J. G. More-Nisbett to be Surgeon Lieutenant Commander.

To be Surgeon Lieutenants: R. M. Coplans, J. C. G. Evans, P. S. Fuller, J. F. Hughes, K. R. Kennedy, D. A. Prothero, D. L. Ridout, M. Urie, J. C. Wyatt, C. V. Arthur, J. M. Couchman, A. Donald, P. B. Nicol, W. M. Davidson, E. S. Elliott, N. L. Fox, A. L. W. Robinson, E. F. G. Stewart, and S. L. A. Clarke.

ARMY MEDICAL SERVICES

Major-General J. W. L. Scott, D.S.O., K.H.P., late R.A.M.C., from Deputy Director to be Director of Medical Services, Eastern Command.

ROYAL ARMY MEDICAL CORPS

Lieutenant-Colonel C. J. Blaikie has retired and retains his appointment.

Major H. P. Rudolf, M.C., to be Lieutenant-Colonel.

Major E. White, from R.A.M.C. (T.A.), to be Major.

Captain A. D. Bourne has relinquished the appointment of Deputy Surgeon.

Captain D. T. Swift has been appointed to a permanent commission, retaining his present seniority. (Substituted for the notifications in the *London Gazette* of June 29, 1934, June 7, 1935, and June 6, 1939.)

Lieutenant D. T. Swift to be Captain, with seniority June 7, 1934.

The appointment of Lieutenant D. T. Swift has been antedated to June 7, 1933, under the provisions of Article 36, Royal Warrant for Pay, 1931, but not to carry pay and allowances prior to June 7, 1934.

Lieutenant T. H. Howell (emergency commission) to be Deputy Surgeon.

Lieutenant P. Kennedy has ceased to hold a commission.

Lieutenants (on probation) G. J. Harrisson, G. M. Barling, W. A. Groom, D. B. Jagger, and G. P. Crean have been restored to the establishment.

The following Lieutenants (on probation) have been confirmed in their rank: J. H. Prain, W. A. Groom, F. J. Ingham, M. F. X. Slattery, G. J. Harrisson, J. A. Allen, E. P. Jowett, N. F. Field, W. L. O'Donnell, W. B. Foster, J. C. B. Nesfield, R. A. R. Topping, C. E. Brown, R. H. C. Manifold, N. E. O'Neill, C. J. Murray, A. R. T. Lundie, D. S. Milne, G. M. Barling, L. A. S. Edmondson, T. C. Hallinan, P. B. Williams, I. O. B. Spencer, G. G. Black, S. P. Bellmaine, H. F. L. Gallaher, W. M. McLennan, G. E. Gray, H. L. Connor, I. D. Paterson, I. W. H. Mansfield, R. S. McGeorge, D. G. Howatson, D. A. Bird, C. D. Salmond, and D. B. Jagger.

To be Lieutenants: T. C. Keble, R. H. S. Langeveld, D. A. D. Kennedy (temporarily relinquishes rank of Captain), F. F. Langridge, R. G. Bannerman, L. Godlove, C. S. Humphries, and H. G. Gibson.

ROYAL AIR FORCE MEDICAL SERVICE

Flight Lieutenant A. W. St. C. Greig has resigned his short service commission.

ROYAL AIR FORCE VOLUNTEER RESERVE

Sir John D. Pollock, O.B.E., has been granted an honorary commission as Wing Commander while serving as Royal Air Force representative on University Joint Recruiting Boards.

ROYAL AIR FORCE VOLUNTEER RESERVE: MEDICAL BRANCH

K. C. Donovan has been granted a commission as Flight Lieutenant for the duration of hostilities.

Flying Officers D. M. Wallace, W. A. S. Falla, H. A. Tracey, R. G. H. Cunningham, W. Hargrave-Wilson, C. R. Jenkins, B. E. Rayner, G. P. Arden, J. C. McC. Browne, W. H. Gossip, L. S. Henry, J. C. McGregor, K. Fawssett, C. R. Mayou, C. O. Gange, I. B.-K. Macgregor, R. J. Owen, W. Simpson, A. K. Thomas, R. E. Angel, D. M. Brown, R. H. Craig, C. Hotson, T. S.-B. Kelly, D. A. Ker, J. B. Maurice, W. Milligan, G. MacK. Gibson, B. J. E. Anson, L. G. Anderson, H. S. Atkinson, C. G. Burgess, P. R. Kemp, H. S. H. O'Conor, R. W. Stewart, M. L. Maley, H. E. Pooler, B. S. Robertson, K. W. Bruce, D. G. Evans, D. H. Le Good, R. I. Shier, G. B. Grayling, F. G. Mundell, J. H. Hall, H. J. Davies, D. M. Hannah, R. Hill, A. Wilson, H. J. H. Hendley, J. B. Methven, F. R. Neubert, J. D. Ramsay, H. J. Simmons, D. Skinner, W. MacP. Cross, J. A. Mains, T. C. Wilson, J. Courtney, W. Heath, F. J. G. Jefferiss, and A. J. Owston to be Flight Lieutenants.

D. D. MacDonald, I. S. Buchanan, N. Jackson, W. M. Philip, J. L. Trent, D. P. Rowe, W. J. C. Anstie, D. McGregor, J. H. P. Gauvain, M. J. Lange, H. W. Whittingham, F. L. E. Musgrove, and F. L. Patterson have been granted commissions as Flying Officers for the duration of hostilities.

AUXILIARY AIR FORCE: MEDICAL BRANCH

J. Noble and H. J. Riley have been granted commissions as Flying Officers.

REGULAR ARMY RESERVE OF OFFICERS

ROYAL ARMY MEDICAL CORPS

Major E. L. Fyffe has ceased to belong to the Reserve of Officers on account of ill-health.

Major D. C. Ogilvie, late R.A.M.C., temporary commission, to be Major, with seniority November 4, 1938.

To be Captains: Captain H. L. G. Hughes, D.S.O., M.C., late R.A.M.C., with seniority May 6, 1937, and Captain J. A. Tolmie, late Captain, R.A.M.C., Special Reserve, with seniority February 13, 1938.

Lieutenant A. H. W. Fleming, from Regular Army Reserve of Officers, Royal Norfolk Regiment, to be Lieutenant, with seniority July 31, 1925.

SUPPLEMENTARY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS

Lieutenants A. C. Stevenson and D. A. Lowe to be Captains.

To be Lieutenants: G. Bourne, I. H. Griffiths, J. C. Harland, E. H. C. Harper, G. Lorriman, and R. R. Simpson.

TERRITORIAL ARMY

ROYAL ARMY MEDICAL CORPS

Lieutenant J. Beattie, from Territorial Army Reserve of Officers, R.A.M.C., to be Acting Colonel and Director of Army Blood Transfusion and Surgical Research Laboratory.

Lieutenant-Colonels J. M. Smith and W. R. Watt have resigned their commissions and retain their rank with permission to wear the prescribed uniform.

Lieutenant-Colonels T. A. Hindmarsh and J. T. Kyle have relinquished their commissions on account of ill-health and retain their rank with permission to wear the prescribed uniform.

Lieutenant-Colonels T. E. A. Carr, J. O. Thomas, M.C., T.D., and J. S. M. Connell, from Territorial Army Reserve of Officers, R.A.M.C., to be Lieutenant-Colonels.

Lieutenant-Colonels G. P. Crowden and A. McG. Duff, M.C., from supernumerary for service with the O.T.C., to be Lieutenant-Colonels.

Major W. Barclay, M.C., from Territorial Army Reserve of Officers, R.A.M.C., to be Acting Lieutenant-Colonel.

Lieutenant L. W. Proger, from Territorial Army Reserve of Officers, R.A.M.C., to be Acting Lieutenant-Colonel and Officer Commanding, Army Blood Transfusion and Surgical Research Laboratory.

Major J. M. Smeaton, having attained the age limit, has relinquished his commission and retains his rank with permission to wear the prescribed uniform.

Major T. S. Torrance to be Deputy Assistant Director of Medical Services, 52nd (Lowland) Division.

Majors W. Brockbank, L. F. E. Jeffcoat, H. Wilson, M.C., N. H. H. Haskins, M.C., H. M. Morris, F. H. Scotson, A. C. M. Savege, T.D., C. B. Levick, J. H. Blackburn, M.C., C. W. Greenhill, H. K. Griffith, E. T. H. Lea, J. L. Menzies, M.C., H. H. Fowler, S. S. Greaves, D.S.O., M.C., A. M. Hughes, R. W. Fairbrother, A. M. Jones, G. V. Davies, J. G. Graham, and H. L. Sheehan, from Territorial Army Reserve of Officers, R.A.M.C., to be Majors.

Majors J. E. Fraser and W. Lamb, from supernumerary for service with the O.T.C., to be Majors.

To be Acting Majors and Deputy Assistant Directors of Medical Services as indicated in parentheses: Captain A. R. C. Higham (2nd London Division, T.A.), Captain F. N. N. Roberts (48th Division, T.A.), Captain F. R. Bettley (53rd Division, T.A.), Captain M. W. Gonin (54th Division, T.A.), Captain E. H. P. Smith (43rd (Wessex) Division), Captain M. L. Formby (1st London Division).

Captain G. D. Kersley to be Major.

Captains H. W. E. Dickey and J. S. Minett have resigned their commissions.

Captain R. J. McN. Love has relinquished his commission and retains his rank.

Captains C. Shaw-Crisp, F. J. Whitelaw, H. P. Gabb, M.C., B. B. Morgan, G. Chesney, L. F. O'Shaughnessy, C. C. Taffs, J. F. Ward, M. E. D. Roberts, W. R. Nash, A. C. Sinclair, C. E. Sykes, H. G. Dodd, F. A. Smorfitt, A. W. Uloth, M.C., A. N. Smith, J. G. Morrin, H. S. Allen, R. A. Quinn, and F. Evans, M.B.E., from Territorial Army Reserve of Officers, R.A.M.C., to be Captains.

To be Captains: F. E. Anderson, D. S. Macpherson, and J. R. Tibbles.

Captains N. Heath, W. M. Arnott, H. H. Kenshole, W. I. C. Morris, S. Andrews, I. Gordon, N. J. Logie, J. B. Forsyth, A. C. Frazer, R. W. Nevin, W. M. Nichols, and M. H. A. Davison, from supernumerary for service with the O.T.C., to be Captains.

Captain N. C. Oswald, from seconded list, to be Captain.

Lieutenants A. G. V. Aldridge, J. B. Plews, J. Mackay-Dick, and L. F. W. Salmon to be Captains.

Lieutenant E. J. G. Wallace has resigned his commission.

Lieutenant B. C. Curwood has resigned his commission on appointment to the Royal Air Force.

Second Lieutenant J L Taylor, from 6th Battalion Gordons, to be Lieutenant, with seniority January 18, 1939.

Lieutenant I. A R Mackenzie, from Gordons, to be Lieutenant

Lieutenant J. D. Easton, from supernumerary for service with the O.T.C., to be Lieutenant.

Lieutenant H. V. M. Jones has relinquished his commission on account of ill-health.

To be Lieutenants: G. R. Ford, C. M. MacQ. Murray, J. M. Moran, J. E. Morrish, R V. Harris, S. S. B. Gilder, O. E. Smith, W. L. Ogle, D Turner, G. Karstaedt, S. L. Frank, H. J. Seddon, R. L. Portway, L. H. Murray, G D. Falconer, C. P. B. Wells, R. Barraclough, P. J. B. Dyce, R T. Rushton, J. J. Davis, E J. Goldsmith, S. G. McK. Francis, K. Maccoll, J. M. L. Howat, A. Wailer, R. I. C. Bradford, J. F. Mackay, and W. J. Street

Lieutenants C. Stewart, B. McK. Dick, M. J. Bett, E. T. Colville, R. E. Pleasance, L. H. Crosskey, and A. C. Flemming, from Territorial Army Reserve of Officers, R A.M.C., to be Lieutenants.

Lieutenants (on probation) F. J. Ingham, C. E. Brown, E. P. Jowett, W. M. McLennan, R. H. C Manifold, J. A. Allen, and M. F. X. Slattery have been restored to the establishment.

TERRITORIAL ARMY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS

Major C. D. S. Agassiz, M.C., has resigned his commission and retains his rank with permission to wear the prescribed uniform.

A, Simpson-Smith to be Major.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

To be Lieutenants: R. G. M. Keeling, K. M. Bell, A. W. G. Cumming, T. D. W. Fryer, L. Gore, G. Haddick, F. G. Holman, C. H. Kerr, A. H. Knowles, D. H. Mackay, A. R. Madden, L. E Milton, A. H. B. Rhodes, W. J. G. Barrie, B. Best, R. Bevan, J. Brennan, D. Brown, A. D. C. S. Cameron, V. Chadwick, A. F. Cowan, D. S. Cownie, C. B. Crofts, J W. N. Deurden, W. D. Dyson, W. R. Gavin, H. C. Kennedy, J H. Patterson, G. W. Pimblett, W. M. Priest, L G. Warwick, G. N. Wood, F. A. Prosser, F G. Greenwood, G. T. Lipscombe, S McCallum, D McIntosh, A. M. Maiden, K. D. G. Reid, R. Y. Stevenson, A. W. Taylor, W. G. Timmis, J. F. Varley, H. Walton, R. B. Wright, D. E H. Beattie, A. K. Cosgrave, W. E. Dornan, R. A. Grant, W. Geraghty, J. M. Harker, R. G. Main, A. B. Milligan, J. G. B. Platts, H. J. Crogan, J. Devlin, H. Rinn, J. R. Bradshaw, C. N. Brown, O. I. Green, A. J. Hardy, W. A. Carey, W. R. Grant, G. B. Marsden, J. M. Bailey, F. Widlake, W. d'A. Maycock, S. J. Chesser, W. Ferguson, I. Richmond, F. G. Jones, A. Kekwick, J. G. Scott, B. W. Lacey, P. R. Greeves, A M. Wadsworth, C. G. Baker, J. C. Dick, B. O'Carroll, G. M. Coope, G. H. W. Kentes, W. Foxe, A. M Graham, S. C. Buck, E. Farquharson, P. U. Colyer, M. O'C. Drury, K. Fraser, R. Baker, A. H. Cooke, C. F. C. White, N. A. Buxton, P. A. Forsyth, J. B. Joyce, L. Wailer, J. C. Walker, G. A. Wray, F. E. Cayley, H. C. Duffey, K. MacD. Foster, E. H. S. Bebb, C. M. Friedland, C. A. Hutt, J. D. James, L. H. Wilkinson, K. D. Gibson, J. J. N. Daniels, G. R. Sedleigh-Denfield, G. D Gordon, T. Sutton-Coulson, J. J. Geany, A. H. Gurney, E. M. G. Galton, W. N. Douglas, A. B. Hewlett, H. G. Hind, A. J. Ireland, J. McHaffie, W. W. Roberts, C. L. Taylor, B. Reeves, C. R. Hillis, R. T. Wimmer, A. G. Chamberlain, F. C. Haward, H. H. Jacob, T. Neville, A. J. S. De Freitas, A. J. Rouse, F. W. Linton-Bogle, W. G. P. Dyson, A. M Gardner, W. F. Hamilton, E. K. Hole, A. Rothwell, R. T. Sharp, J. B Ro't, J. R. Salmond, W. W. Weir, G. McComas, J. E. V. Jones, P. H. Lenton, D. W. Lindsay, J. P. Semple, A. E. W. Brooker, R. N H. Williams, B. W. Hughes, D M. Jones, S. Bennett, J. W. Spence, J. H. L. Conway-Hughes, N. H. Halper, N. J. S Gurney, J. J. Kempton, S. M. Vassallo, C. K. Carroll, R. Kauntze, C. W. Seward, K. H. Taylor, T. W. Buckley, A Colbert, J. N. Hamill, C. W. Illife, A. K. Kerr, W. A. H. Stevenson, T. M. Strang, J. M. Young, A. I. Barron, K. Simon, W. D. L. Smith, R K Pilcher, H. Pozner, M. T. Read, and J. C. Townley.

Postgraduate News

The Fellowship of Medicine announces that a course in neurology, especially intended for M.R.C.P. candidates, will be given at the West End Hospital for Nervous Diseases, daily at 2.30 p.m., from November 13 to 24. Instruction will consist of a clinical demonstration followed by a lecture. It is hoped that further short courses of instruction may be arranged in the near future, and postgraduates desiring instruction are asked to make known their requirements to the Fellowship of Medicine, 1, Wimpole Street, W.1.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—*Daily*, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetrical and Gynaecological Clinics and Operations. *Daily*, 1.30 to 2 p.m., Post-mortem Demonstration. *Mon.*, 4 p.m., Lord Horder, Ward Clinic. *Wed.*, 11.30 a.m., Clinical-Pathological Conference (Medical): 2.30 p.m., Clinical-Pathological Conference (Surgical). *Thurs.*, 2 p.m., Dr. Duncan White, Radiological Conference. *Fri.*, 2 p.m., Clinical-Pathological Conference (Gynaecological).

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

General Meeting of Fellows.—Tues., 2 p.m.

Section of History of Medicine.—Wed., 2.30 p.m. Paper by Dr. F. Hernaman-Johnson: The Social Standing of the Doctor throughout the Ages.

BIOCHEMICAL SOCIETY.—At Department of Biochemistry, Oxford, *Sat.*, 11.45 a.m. Communications and Demonstrations.

British Medical Association

OFFICES, BRITISH MEDICAL ASSOCIATION HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

Addresses, etc.

SECRETARY (Telegrams: Medisecra Westcent, London).

EDITOR, BRITISH MEDICAL JOURNAL (Telegrams: Aitiology Westcent, London).

SUBSCRIPTIONS, ADVERTISEMENTS, etc. (Telegrams: Medisecra Westcent, London).

Telephone number of British Medical Association and British Medical Journal, Euston 2111 (internal exchange, six lines).

SCOTTISH SECRETARY: 7, Drumsheugh Gardens, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 24361 Edinburgh.)

Cumann Dochtúirí na h-Éireann (I.M.A. and B.M.A.): 95, Merrion Square, W., Dublin. (Tel.: 62550 Dublin.)

Diary of Central Meetings

NOVEMBER

8 Wed. Central Emergency Standing Subcommittee, 2 p.m.

Katherine Bishop Harman Prize

The Council of the British Medical Association is prepared to consider an award of the Katherine Bishop Harman Prize, of the value of £70, in the year 1940. The purpose of the prize, founded in 1926, is the encouragement of study and research directed to the diminution and avoidance of the risks to health and life that are apt to arise in pregnancy and child-bearing. It will be awarded for the best essay submitted in open competition, competitors being left free to select the work they wish to present, provided this falls within the scope of the prize. Any medical practitioner registered in the British Empire is eligible to compete. Should the Council of the Association decide that no essay submitted is of sufficient merit the prize will not be awarded in 1940, but will be offered again in the year next following this decision, and in this event the money value of the prize on the occasion in question shall be such proportion of the accumulated income as the Council shall determine. The decision of the Council will be final.

Each essay must be typewritten or printed in the English language, must be distinguished by a motto, and must be accompanied by a sealed envelope marked with the same motto and enclosing the candidate's name and address. Essays must be forwarded so as to reach the Secretary, to whom all inquiries should be addressed, British Medical Association House, Tavistock Square, London, W.C.1, not later than December 31, 1939.

Important Notice concerning Appointments

The attention of medical practitioners is drawn to the important notice concerning appointments which is published each week in the advertisement columns of the *Journal*. This notice asks practitioners to communicate with the Secretary of the British Medical Association before applying for any of the appointments listed therein. It appears this week at page 43.

VACANCIES

EXAMINING FACTORY SURGEONS.—The following vacant appointments are announced: (*a*) Islay (Argyllshire); (*b*) Mevagissey (Cornwall); (*c*) Cranborne (Dorset); (*d*) Selston (Nottinghamshire). Applications to the Chief Inspector of Factories, Home Office, Whitehall, S.W.1, for (*a*) by November 7, and for (*b*), (*c*), and (*d*) by November 14.

SPECIALIST MEDICAL REFEREE UNDER THE WORKMEN'S COMPENSATION ACT, 1925, to take ophthalmic cases arising in the County Court Districts of Birmingham (Circuit No. 21): Bromsgrove, Bromyard, Kidderminster, Stourbridge, Tenbury, Worcester, Evesham, Great Malvern, Hay, Hereford, Ledbury, Leominster, Kington (Circuit No. 22); Atherstone, Coventry, Bletchley and Leighton Buzzard, Northampton, Daventry, Rugby, Nuneaton (Circuit No 23); Aylesbury, High Wycombe, Banbury, Shipston-on-Stour, Buckingham, Chipping Norton, Oxford, Thame, Wallingford, Wantage, Witney, Henley-on-Thames, Windsor, Reading (Circuit No. 36). Applications to the Private Secretary, Home Office, Whitehall, S.W.1, by November 18.

APPOINTMENTS

EXAMINING FACTORY SURGEONS.—T. S Blaiklock, M.D., for the Morpeth District (Northumberland); A. N. Bousfield, M.B., B.S., for the Wooler District (Northumberland); A. H. MacG. McMullan, M.B., B.S., for the Shipston-on-Stour District (Warwickshire); P. S. Byrne, M.B., Ch.B., for the Carnforth District (Lancashire).

The Minister of Health has appointed Miss E. M. R. Russell-Smith and Miss E. A. Sharp to be assistant secretaries (acting) of the Ministry of Health.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 11 1939

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WAR NOTICES

Notification of Measles and Whooping-cough

At the last meeting of the Council of the British Medical Association, held on September 27, it was reported that the Ministry of Health proposed to make the notification of measles and whooping-cough compulsory during the present emergency and suggested that a notification fee of 1s. instead of 2s. 6d. should be paid to practitioners. The following resolution was passed:

> *Resolved:* That the Ministry of Health be informed that the Council of the Association does not see its way to accept the proposal that the prescribed fee for the notification of measles and whooping-cough should be 1s. per case instead of 2s. 6d.

Despite this protest the Ministry has adhered to its original proposal to reduce the fee for notification of these two infectious diseases to 1s. The matter will be further considered by the Association's Executive Committee at an early date.

Emergency Medical Service: Deputation to Minister of Health

At a meeting on November 3 the Minister of Health, Dr. Walter Elliot, who was accompanied by Sir George Chrystal, Permanent Secretary of the Ministry, and Dr. Hebb, Director-General of the Emergency Medical Service, discussed with representatives of the advisory committee set up by the Central Emergency Committee (Central Medical War Committee) their recommendations for the reorganization of the Emergency Medical Service. The main objects of these recommendations were to release consultants and other senior members of the medical profession from their whole-time obligations in the Emergency Medical Service so that they might be free to attend to the needs of the civilian sick and to their normal duties in the medical schools, while remaining available on a part-time basis for casualty work. The committee's representatives were introduced by Mr. H. S. Souttar, chairman of the Central Medical War Committee, and consisted of Sir Robert Hutchison, P.R.C.P. (chairman of the Advisory Committee), Mr. Hugh Lett, P.R.C.S., Professor William Fletcher Shaw, P.R.C.O.G., Sir Girling Ball, Professor A. H. Burgess, Professor R. M. F. Picken, Dr. G. C. Anderson (Secretary), Dr. Charles Hill (Deputy Secretary).

The Minister discussed their recommendations point by point, and said that now that he had in his mind the broad principles of their proposals he would consider them with his expert advisers. He hoped that it would be possible for a few representatives of the committee to discuss the details of the proposals with his advisers next week.

CENTRAL EMERGENCY COMMITTEE
(Central Medical War Committee),
British Medical Association House,
Tavistock Square, W.C.1.

THE SHARE OF THE ABSENTEE PARTNER

A number of the inquiries that are being received by the B.M.A. relate to the way in which the moneys received by a partnership under the Protection of Practices Scheme should be divided between the individual partners. While there may be, in any particular case, factors which would modify any decision—as, for instance, where the partners' lists of insured persons varied widely in size—the general principles of the scheme offer a valuable guide as to how the moneys may be apportioned. To take a typical case, Dr. A. will receive as an absentee half of his panel cheque from the insurance committee, while Dr. B., by claiming on the "emergency pool," receives a payment approximating to the other half. This division of these moneys can be regarded as equitable, as it is very much the same as the way in which moneys are divided between two practitioners not in partnership.

At first sight it might be thought that the apportionment of the other receipts of the partnership should be dealt with in a similar manner—that is, that each of the partners would receive a share similar to what he would have obtained had they been single-handed practitioners and not in partnership. There are, however, two considerations which must be taken into account before a fair and equitable method of division of the receipts can be arrived at. Were Dr. A. and Dr. B single-handed practitioners it is unlikely that Dr. B. would undertake to see the whole of Dr. A.'s patients, unless both practices were comparatively small. If the work proved to be considerable, Dr. B. would probably limit the number of patients he saw, and induce other patients of Dr. A. to find some other doctor in the neighbourhood. Where, on the other hand, Dr. B. is a partner of Dr. A., it is unlikely that he would wish patients of the practice to have to seek advice elsewhere; he would either do a considerable amount of extra work himself or might possibly need to engage an assistant to help him out. That is to say, instead of Dr. A.'s patients constituting an increase of, say, 20 per cent. to the work of other doctors, which would be undertaken without inconvenience, they would constitute an increase of possibly 100 per cent. to Dr. B.'s work. The second consideration is that were Dr. B. a single-handed practitioner he would be compensated for any extra work by the fact that he was getting in touch with new patients in the area, who would otherwise have become patients of Dr. A. In a partnership, however, Dr. A. on returning to practice expects to resume his share of the joint practice, which has been maintained at a high level by Dr. B.'s efforts; that is to say, the prospects to which he returns are enhanced in value as compared with those which may be expected by a single-handed practitioner.

It is suggested that the following is a method of dividing receipts from private practice which would take into consideration all these points. The total expenses of running the practice would be deducted from the total receipts, and the net income would then be divided between the partners according to their shares under the partnership agreement. The partner or partners who are absentees would agree that, in consideration of the fact that they were absent on National Service, they would expect only 50 per cent. of their share arrived at in this manner, and that the other 50 per cent. should be retained by the remaining partner or partners in consideration of the work they had done in maintaining the present income and the future standing of the practice. Each absentee would retain his Army salary, which would not come into these calculations at all.

Corrigendum

In the war notices on the Emergency Medical Service in the *Supplement* of November 4 (p. 215) it was stated that comparatively few of the 3,000 practitioners in the provinces were enrolled "on a part-time basis." This should have read "on a whole-time basis."

Correspondence

Organization and Staffing of First-aid Posts

SIR,—It is one of the ironies of fate that efforts directed to some end occasionally have the opposite effect in practice, and this seems to be happening to A.R.P. in certain localities. Thus in order to effect co-ordination of the various ambulance services all their personnel have naturally been placed under the authority of the local authority, which means in practice the medical officer of health. Unfortunately, this tends to break the attachment which has naturally grown up between the ambulance divisions and their own surgeons; one loyalty is broken before another has had time to take its place, and the result is a feeling of being driven instead of led.

Then it is quite obvious that the medical officer of a first-aid post must have the personnel under his immediate charge, and this has the unfortunate effect of making a distinction between those under the charge of the medical officer of health and those at the first-aid post. This is felt by the personnel, and it also has deplorable results in practice. Stretcher parties are under the control of the medical officer of health through the control room, and every first-aid post has a great preponderance of women on its staff; mine, for example, has a complement of thirty women and six men. Of these latter two are required to control those who may come to the post, and any who may be left over—for we are supposed to arrange for three shifts—may be more than occupied with decontamination if gas has been used. This leaves the women to do practically all the first-aid work proper, male and female. Now it would seem a sensible arrangement that as soon as a raid is over and the stretcher parties have returned they should be available to do anything necessary inside the post. But as they are under the control of the medical officer of health it is definitely ruled that this cannot be done.

Other examples might be given in which too close adherence to regulations may and does cause irritation and inefficiency sufficient to damp the enthusiasm of the most ardent. The fundamental trouble seems to be that public servants have become officials and forgotten that they should be servants of the public, while the regulations have been drawn too strictly in some directions with a misapprehension of actual conditions in others. For example, Circular 1831, para. 3, states that the medical officer of the first-aid post "will be responsible to the medical officer of health, who will no doubt confer with the medical officers . . . for the purpose of instructing them, etc." We are all anxious to learn, but in most cases the medical officers to the posts have been doing first-aid work for years—often in actual war conditions—while the medical officer of health has not. The latter, therefore, does not confer over this or anything else either. If the regulations had insisted on co-operation as the first essential all might have been well, but instead they emphasize the primacy of the medical officer of health. Medical officers of health should give practitioners in their area not authority, for which few of us wish, but that co-operation without which the best of schemes must fail, and that consideration which is the foundation of all voluntary effort and healthy local activity.—I am, etc.,

Winsford, Oct. 28. **W. N. LEAK, M.D.**

Naval, Military, and Air Force Appointments

ROYAL NAVAL MEDICAL SERVICE

Surgeon Commander R. Buddle, O.B.E., has been placed on the retired list with the rank of Surgeon Captain.

ROYAL NAVAL VOLUNTEER RESERVE

To be Surgeon Lieutenant Commanders: W. Watkinson, V. M. Matthews, and J. A. Lewis.

Surgeon Lieutenants E. A. H. Hindlaugh and M. G. Stratford to be Surgeon Lieutenant Commanders

Probationary Surgeon Lieutenant D. J. N. McNab to be Surgeon Lieutenant, with seniority December 28, 1937

To be Temporary Surgeon Lieutenants: H. V. Lavelle, L. R. Blair, A. J. Lea, T. O. Mason, D. V. John, S. P. H. Fergus, R. G. Knight, T. Parker, F. G. Maitland, W. A. Robson, J. D. Thompson, A. L. Lancaster, C. R. Gibson, F. T. Doleman, G. E. Lewis, T. I. V. Ferguson, L. G. Boyd, J. E. Struthers, E. J. Neill, J. D. Hughes, J. F. A. Hackett, the Hon. A. G. Gathorne Hardy, E. M. Donaldson, J. F. Ryan, M. Curwen, W. T. Andrews, A. L. Schofield, J. D. Kinnear, W. B. D. Miller, E. Ashman, E. W. Darrell, M. Mandelstam, A. McW. Green, S. L. Lord, A. D. Hoffmann, K. C. Jeffery, and A. J. D. Lewis.

ARMY MEDICAL SERVICES

Lieutenant-Colonel R. E. Barnsley, M.C., from R.A.M.C., to be Colonel.

ROYAL ARMY MEDICAL CORPS

Majors E. L. F. Nash, M.C., and M. Morris to be Lieutenant-Colonels

Lieutenants (on probation) G. P. Crean and J. D. Condon have been confirmed in their rank.

ROYAL AIR FORCE MEDICAL SERVICE

Air Vice-Marshals Sir John McIntyre K.B.E., C.B., M.C., and Sir Alfred W. Iredell, K.B.E., C.B., have relinquished at their own request, their present rank while re-employed with the Royal Air Force and have been granted the rank of Group Captain

ROYAL AIR FORCE RESERVE OF OFFICERS: MEDICAL BRANCH

R. A. W. Kerr has been granted a commission in Class D as Flight Lieutenant with seniority October 17, 1934

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—*Daily*, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetrical and Gynaecological Clinics and Operations. *Daily*, 1.30 to 2 p.m., Post-mortem Demonstration. *Mon.*, 3.30 p.m., Lord Horder, Ward Clinic. *Wed.*, 11.30 a.m., Clinico-Pathological Conference (Medical); 2.30 p.m., Clinico-Pathological Conference (Surgical) *Thurs.*, 2 to 4 p.m., Dr. Duncan White, Radiological Conference. *Fri.*, 2 p.m., Clinico-Pathological Conference (Gynaecological).

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

Section of Psychiatry.—Tues., 2.15 p.m. Meeting in honour of the late Professor Sigmund Freud. Short addresses will be given by Dr Ernest Jones, Professor E. Mapother, and Professor Millais Culpin.

Section of Physical Medicine.—Fri., 2.30 p.m. Presidential Address by Dr. J. B. Mennell: Foot-gear.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.—*Thurs.*, 3 p.m., David Lloyd Roberts Lecture by Sir Robert Hutchison, Bt., P.R.C.P.: Medical Literature.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 26, Portland Place, W.—*Thurs.*, 4 p.m. Paper by Professor P. A. Buxton: The Louse: Present Knowledge and Future Work.

VACANCIES

EXAMINING FACTORY SURGEON.—The appointment at Littlehampton (Sussex) is vacant. Applications to the Chief Inspector of Factories, Home Office, Whitehall, S.W.1, by November 21

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this heading is 9s. This amount should be forwarded with the notice, authenticated by the name and address of the sender, and should reach the Advertisement Manager not later than the first post Tuesday morning to ensure insertion in the current issue.

DEATH

CAMPBELL.—On November 3, 1939, L. Mabel R. Campbell, M.A., M.B., Ch.B., of 2 Park Terrace, Newcastle-on-Tyne, daughter of the late Rev. John Campbell, D.D., Kirkcaldy, Fife

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 18 1939

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WAR NOTICES

Recognition of Previous R.A.M.C. Service

Following representations by the Central Emergency Committee, the War Office has decided that practitioners who have had previous war service in the Royal Army Medical Corps will, if now appointed to emergency commissions in the Corps, be gazetted in the rank of captain from the date of joining. This ruling will apply to those practitioners who have already been given emergency commissions as well as to those who are appointed to emergency commissions in the future.

Petrol Rationing

Much difficulty has been caused by the failure on the part of large numbers of medical practitioners to follow the proper procedure when applying for supplementary petrol rations. It is again emphasized that every such application must be made on Form R.M.S.1, and must be accompanied by the car registration book.

Now that the Divisional Petroleum Officers have had time to organize their work there is reason to hope that many of the mistakes and misunderstandings which occurred at the time of the first allocation of petrol rations will in future be avoided. The British Medical Association remains in touch with the Petroleum Department and will do everything possible to ensure that medical applications are dealt with reasonably and promptly. It is recommended that the word "Doctor" be written on the envelope containing the application.

Members are reminded that complaints and appeals should be addressed to the Divisional Petroleum Officer and *not* to the Association's local advisory officer.

Central Emergency Committee
(Central Medical War Committee),
British Medical Association House,
Tavistock Square, W.C.1.

MEDICAL STUDENTS AND MILITARY SERVICE

Although the problems confronting medical students at this time are not primarily the concern of the British Medical Association, inquiries received suggest that the following information will be of interest to some members.

A medical student who has passed the first professional examination and completed two terms of anatomy and physiology is a member of a "reserved" occupation. He is expected to continue his studies and is not liable for military service or eligible for national service of other kinds. If the necessity for maintaining himself away from home, resulting from the transference of his medical school to another area, causes financial difficulty, no State assistance is available to him. On this problem, as on any other difficulties with which he may be confronted, he should consult the dean of the school.

A student who has not yet passed the first professional examination and completed two terms of anatomy and physiology is at liberty to continue his studies unless and until he is called up for military service, provided that in the changed conditions his medical school can continue to provide a vacancy for him. In the event of his completing the stated period of anatomy and physiology before his age group is called up he will cease to be liable for military service and will be treated as "reserved."

No decision has yet been reached regarding the release from military service of medical students who have reached a stage of the curriculum at which they would ordinarily be regarded as "reserved" but who, because of their pre-war commitments to the Territorial Army or other branches of the Forces, are now serving as combatant officers or in the ranks. It is understood that the Ministry of Health is in communication with the military authorities on this subject.

CANADIAN MEDICAL ASSOCIATION AND THE WAR

We quote below from an editorial entitled "War" which appeared in the *Canadian Medical Association Journal* for October, 1939.

"The Canadian Medical Association has not been remiss in its duty. Months ago it took action to aid the Federal authorities in certain important directions and at all times has manifested its readiness to do its bit. It will continue its efforts. As illustrating its attitude we cite the following message which was sent on September 1 to the Right Honourable the Premier of Canada, the Honourable Minister of Defense, and the Honourable Minister of Pensions and National Health:

> 'In this time of crisis I am directed to say that the Canadian Medical Association with its Divisions and Branches across Canada stands ready to perform such services as may be regarded as properly coming within its scope. In the event of war the medical needs of the army and of the civilian population give rise to problems of medical selection in order that both needs may be met adequately. In the Motherland the British Medical Association has undertaken to act in an advisory capacity to the Government in the solution of these problems. Should the Government of Canada desire the Canadian Medical Association to act in a similar advisory capacity may I repeat that the Canadian Medical Association is ready and willing to do so.
>
> (Signed) T. C. Routley,
> *General Secretary,*
> *Canadian Medical Association*'

Most of us remember with pride the noble response made by the medical men of this and other countries during the last emergency, twenty-five years ago. The sacrifices made then were made willingly. We do not doubt that they will be made willingly again. It is a relief to know that we are now better prepared. The lessons of the last war have been well learned. There will be no attempts to fit square pegs into round holes. We are satisfied that the medical men will be assigned to the duties which each is best qualified to perform. This is reassuring. It will make for greater efficiency. Let us get on with the job."

PROTECTION OF PRACTICES

HOW THE SCHEMES WORK

Throughout the country the profession is co-operating loyally to secure the smooth working of the local Protection of Practices Scheme. In many areas the percentage of practitioners who have entered into an agreement with the Local Emergency Committee is a very high one. The result has been to make simpler the administration of the scheme by the committee and by those other organizations concerned such as insurance committees and local bureaux.

The ordinary provisions of the model scheme involve the acting practitioner signing the medical card of those patients of the absentee doctor who apply for treatment and sending the cards to the insurance committee. In this way the acting practitioner builds up a "provisional list," on the basis of which he is remunerated at the end of the quarter. The small number of patients who obtain treatment in the early stages of the scheme, as compared with the total number of patients "at risk" because their doctor is an absentee, is compensated for by the fact that the unit value of each claim made on the "emergency pool" in this way is a comparatively large one to begin with, diminishing in subsequent quarters as more patients receive treatment. As regards private patients, the acting practitioner records the particulars of any treatment given on the cards provided. These cards are sent each month to the bureau, which arranges the division of fees between the practitioners concerned.

This being the way in which the scheme deals with the single-handed absentee practitioner, it is interesting to see how adequately these arrangements can cope with conditions in a partnership practice. The following observations apply to schemes based on the model—that is, to schemes in which no special provision is made for partners or others acting as "nominated deputies." They do not apply to those few schemes in which such special provision is made. To take an illustrative case, Dr. A. and Dr. B. are in partnership with equal shares; the practice is not an unduly large one and neither partner is working to capacity. Dr. A. is called up on National Service, becoming an absentee practitioner: Dr. B. is left behind as an acting practitioner. As regards national health insurance work, Dr. B. proceeds in the same way as any other acting practitioner. He signs the medical card of any N.H.I. patient seeking advice if the patient is on any other practitioner's panel list, *including patients of the partnership who are on his partner's list*, and sends all such signed medical cards in to the insurance committee. It has been objected to this procedure that it entails extra work for the acting partner, and that in normal times patients of a partnership are seldom asked to produce their medical cards. The notices exhibited in the practitioner's surgery and waiting-room should make patients realize that their co-operation is necessary at the present time if doctors are to be able to continue to provide medical attention for all who require it, and that the production by patients of their medical cards when required is one of several ways in which they can assist in these emergency arrangements. The slight amount of extra-work in which the remaining partner or partners are involved is worth while if it secures uniformity in the central arrangements of the scheme, for any such simplification must be of benefit to all practices in the area, including that of the partnership.

By proceeding on these lines Dr. B. institutes claims on the emergency pool, to which Dr. A. has contributed half his usual panel remuneration. Under the usual conditions in a partnership practice Dr. B. is likely to see the bulk of Dr. A.'s panel patients, and his claim on the emergency pool is likely to be a substantial one. In this way he will be adequately remunerated for all the patients of Dr. A. whom he actually sees, while at the same time any other acting practitioners who have to see some of Dr. A.'s patients realize that they also will be adequately remunerated as a result of Dr. A. having made the usual contribution to the pool.

With regard to private patients of a partnership some slight modification of the normal arrangements is desirable. Where Dr. B. knows, or has ascertained, that the patient is one of Dr. A.'s private patients, records of professional services need not be sent on Form A to the bureau. The book-keeping necessary in such cases would be done under the ordinary arrangements of the partnership. It will be seen that this modification of the usual arrangements of the scheme makes for simplification and economy, and cannot adversely affect the interests of other practitioners in the area. Where, however, Dr. B. is called to give advice to patients of other absentee practitioners, he fills up Forms A and AA and sends them on to the bureau in the usual way.

ORGANIZED TEACHING OF MOTHERCRAFT

The National Association of Maternity and Child Welfare Centres recently called a meeting of medical men and women to consider the establishment of a scheme of instruction and examination in mothercraft with a view to ensuring that girls who will be the mothers of the next generation are better equipped than at present in this respect. A certain amount of teaching of mothercraft is given in the elementary and secondary schools, but it is merged with many other domestic subjects which perhaps make more appeal to the girl mind. It also figures in the syllabus of the evening institutes, but there again it has not proved to be a popular subject. A certain amount of such teaching, of course, is given to expectant mothers at the ante-natal centres, but the association thinks that this teaching should begin earlier, even before marriage. The association, therefore, has drawn up regulations and a syllabus for the teaching of mothercraft, and these are being brought to the attention of local education and public health committees. It is proposed to have a system of examinations of a non-professional type for women and girls over 16 who have attended an approved course of instruction. The examiners, appointed by the association, would work in pairs, one doctor and one health visitor examining candidates together. Each candidate passing the examination would be given an appropriate certificate. The full course of instruction would comprise not fewer than twenty-four lectures, each lasting one hour, and followed by one hour's practical work. The lecturers would be doctors, nurses, health visitors, and other persons of special experience, chosen locally and remunerated according to a local arrangement. As for the examiners, their fees would be based on the number of candidates, the minimum being £2 2s. for doctors and £1 1s. for health visitors, and it is suggested that the examination of twelve candidates would normally occupy the time of the pair of examiners for a two-hours session. It is also proposed to make available a junior course for younger girls, which would be followed by an examination and the award of a junior certificate. The senior syllabus is comprehensive. It begins with simple anatomy and physiology and passes on to the care and diet of the expectant mother, the necessity for early medical examination and continued supervision, and the arrangements for home or hospital confinement. Then come the care of the mother during the lying-in period, the importance of awareness regarding sepsis, the early management of the infant, breast and artificial feeding, weaning, and normal development and character formation. One section deals with the prevention of disease—how to avoid digestive upsets, infections, and injuries, how to practise efficient home nursing, and the necessity for periodical overhaul by the doctor. What seems likely to be a very useful section is headed "Popular errors and fads." Finally the student will be instructed how to make the best use of the provision afforded by local authorities for mother and child. The junior course deals with elementary facts about infants and the feeding and clothing of both infants and older children. The association has issued some excellent pamphlets on the whole subject, one of which, addressed "To Mothers and Fathers," has reached a circulation of 1,100,000 copies.

MIDWIFERY SERVICE

The report of the Central Midwives Board for the year ended March 31, 1939 (H.M. Stationery Office, price 4d.), shows that 16,761 women were practising as midwives in England and Wales in 1938, compared with 17,494 in 1937, and that there were 62,905 women on the Midwives Roll, a net decrease of 4,184 on the total at the end of March, 1938. During the year the new training and examination rules of the Board came into operation, and the number of candidates entering for examination was the largest on record—4,806 as against 4,420 for the previous year and 2,683 for the year ended March 31, 1927.

A report on the examinations held during the year is included, and notes of various decisions by the Board on midwives' training, etiquette, and practice. Reference is also made to the post-certificate courses of training for midwives which were made obligatory as from January 1, 1939. The report also refers to the arrangements which had been made before the end of March this year for an efficient midwifery service in war time. The Board had compiled a register of women whose names were on the current Roll of Midwives and who would be free and willing to undertake midwifery work either in their home districts or anywhere in the country. It was divided into two parts: the first contained the names and particulars of those midwives who were prepared to act only in their home districts, and was arranged according to the respective local supervising authorities; the second part related to those midwives who were prepared to work anywhere in the country. On the outbreak of war a duplicate of the first part of the register was distributed to the various local supervising authorities. The second part constitutes a central pool which can be drawn upon as required on application to the Board by any local authority whose need for additional midwives remains unsatisfied.

Assurance for Doctors

War Risks and Permanent Disability Insurance

A policy recently issued by one of the large insurance companies undoubtedly supplied to some extent a long-felt public want—namely, cover against death and permanent disablement by loss of limbs or sight. The drawback to such a contract, however, is its limitation in respect of permanent disability, since payment is conditional on loss of limbs or of sight. A policy of this nature to be really satisfactory should cover those cases in which the individual is permanently precluded from following his normal employment by war injury in one form or another but in which there is no actual loss of limbs or sight. It should also cover permanent disability arising from the use of poisonous gases.

Such a policy has just been placed on the market. It is subscribed by a leading group of underwriters at Lloyds, and the premium at present is moderate. The contract insures a capital sum which is paid upon the individual being rendered permanently incapable of following his *normal* employment, and such incapacity must have lasted one year from the date of the injury before payment is made. The decision whether "permanent incapacity" exists rests with two medical men, one appointed by underwriters and one by the policy-holder, and, should they disagree, with a third medical referee selected jointly by both parties at the outset. The premium required for the contract, which is limited to war injuries received in the United Kingdom only, is 10s. per cent. per annum. Underwriters reserve the right to increase or decrease the rate at each renewal as they think fit.

It is, of course, essential to provide an adequate sum insured, because apart from private means and the sale value of a practice that sum will have to earn the necessary income for the rest of the insured person's life. It should be remembered that this policy covers only permanent disability and not the risk of death, which can easily be provided for under other forms of policy. The Medical Insurance Agency is in a position to supply full details of the scheme and give any essential advice.

Correspondence

Unwanted Doctors

SIR,—I am becoming increasingly perturbed with the ungenerous way the authorities are dealing with a section of the profession. Over a year ago the majority of us were willing to serve the country either in a military or civilian capacity. This was confirmed last March. Now after two months of war a fair proportion of us find we are not wanted for the military or civilian services and only to a limited extent for private practice. I believe only surgeons, radiologists, pathologists, and anaesthetists are in most demand for the E.M.S. Few ophthalmologists are wanted for the E.M. and military services, and other specialists are similarly placed. Surely our services ought to be utilized in any emergency?

We ought to be rescued from this ambiguous situation. If we are not wanted for our specialty we ought to be told so. We ought to be given facilities immediately to get the necessary training to do something useful instead of being left as so much flotsam and jetsam. Moreover, it is evident every medical practitioner and qualified nurse should be provided with a steel helmet and service respirator and efficient shelter. Our services are too valuable to the community to be lost.—I am, etc.,

London, W.1, Nov. 4. CHARLES YOW, M.D.

A Warning to Others

SIR,—I feel it my duty to draw the attention of members of the British Medical Association to an unpleasant attempt at exploitation of the national emergency by an insurance company. I was previously in general practice, but was commissioned in the Royal Air Force (Medical Branch) on the outbreak of hostilities. A few weeks later I received a letter from a well-known company, with which I had insured my car, informing me that as a result of entering His Majesty's Service they were raising the premium on my car and at the same time reducing the benefit from its present full comprehensive scale.

I wrote to the company and explained that the car would only be used in this country and for the same purposes as previously—professional use and pleasure. I also said that there was no clause in the policy covering such an action on their part. In two subsequent letters they alleged that I had changed my occupation from that given in the proposal of medical practitioner. If those of us who take any active part in the present war are to lose their status as medical practitioners a large proportion of your members will be affected sooner or later.

With the object of settling our rights by means of a test case, I informed the company that I refused their demands and was prepared to fight the matter. I have to-day received a letter from the company in which the original policy is returned to me unchanged, the company asserting that their demands are still in order but that further correspondence is not justified. In other words, the company have surrendered completely in the face of an offer to go to law. I bring this to your notice so that other practitioners may know that the ramp has only to be fought in order to collapse. I enclose my card.—I am, etc.,

Nov. 6. FLYING OFFICER, R.A.F.

Car Labels

SIR,—Is it really the policy of the B.M.A. that the "Doctor" label should be affixed permanently to our cars? Surely it is intended for use during an actual emergency (air raid), not as a mobile daily advertisement. I have mounted mine on cardboard, and with elastic bands attached it to the small sun visor, which flaps down at once if the need should arise. I may be old-fashioned, but still prefer to think I belong to a profession and not a trade.—I am, etc.,

Nov. 7. M.B.

Naval, Military, and Air Force Appointments

ARMY MEDICAL SERVICES

Colonel A. G. Wells, D.S.O., late R.A.M.C., has retired and has been retained in his appointment.

Colonel J. S. Hughes, M.C., has retired on retired pay and has been granted the honorary rank of Brigadier.

Lieutenant-Colonel J. B. A. Wigmore, from R.A.M.C., to be Colonel, with seniority July 28, 1937.

ROYAL ARMY MEDICAL CORPS

Major W. S. Evans to be Lieutenant-Colonel.

To be Lieutenants: S. A. Bower, T. J. Guinan, W. Maxwell, H. L. Beale, R. C. Little, F. A. Bearn, B. P. R. Hartley, D. S. Piper, S. D. H. D. Wallis, J. C. Miller, E. J. Walsham, L. G. McLean, F. M. Hanna, G. Patton, M. T. O'Sullivan, H. McL. McLaren, C. D. Anderson, A. M. MacCallum, L. N. O'Hara, R. G. Melrose, F. O. Mell, A. U. MacKinnon, A. L. Masterton, W. E. Pennington, G. S. Trower, F. C. Hamilton, M. J. Hilton, D. C. Harris, J. A. Morton, R. T. Bannister, J. G. Macarthur, D. P. Pick, A. F. Stallard, V. R. O'Connor, D. J. Fraser, W. G. Brookes, A. H. G. Down, G. A. J. Teasdale, J. R. Kingdon, A. Roy, E. O. Watson, C. T. Norris, L. J. Panting, S. T. Williamson, J. G. Bogle, C. Rigby, J. M. McKillop, S. O. Aylett, T. J. McCarthy, J. Smallpeice, J. R. Steen, B. Yuill, H. P. Watts, A. Keay, H. H. Boyden, W. R. Hunter, J. J. Tillie, F. W. Dickson, J. M. Mitchell, T. I. Sibbald, G. de N. U. Somers, A. W. Forrest, J. A. Hartley, R. D. Monteith, D. R. Holden, D. Kelly, W. J. Bold, H. M. Boston, D. B. Smth, H. L. Wallace, H Simmons, J. G Jamieson, F. A. Donnolly, A. A. F. Shepherd, W. O. Warrington, J. C. Taylor, J. Marshall, M. T. Parker, A. S. Rudd, T. D. Inch, H. E. S. Stiven, W. B. Williams, A. F. R. Dewar, W. M. Forster, J. Amos, J. Brown, W. J. C. Crisp, E. H. Griffiths, H. G. H. Richards, C. T. H. Whiteside, J. Littlejohn, J. H. D. Millar, F. H. Barber, G. K. Beatty, P. Coleman, G. E. Ord, H. G. Stanton, J. M. Lawrie, A. Logan, H. Paterson, D. B. Wallis, H. P. Williams, D. Harkins, J. A. McEwan, D. Benson, R. P. Dinley, A. V. Griffiths, J. A. Neylon, G. G. Waldin, N. C. Coombs, N. W. Jones, A. E. Brewer, N. J. H. Davidson, H. K. B. Armstrong, R. J E. Bell, J. W. Browne, W. M. Burgess, A. E. Delgado, A. G. Lumsden, K. S. E. Macrae, H. J. Minford, E. A. E Palmer, R. H. Reid, C. A. Hinds-Howell, E. J. M. Wenyon, C F. Coutts-Wood, E. R. Woodroofe, P. M. Wright, A. D. Harper, G. M. Killpack, E. W. Skipper, J. L. Dales, W. M. Capper, D. H. Craig, P. A. Flood, F. S. Tait, A. Young, A. Burness, R. W. Cope, W. W. Deane, A. R. Dearlove, P. R. K. Lane, J. J. Hogan, A. J. Thomson, H E. Lewis, C. S. Wise, A. N. Redfern, A. D Fisk, F. Clifton, A. G. H. Clay, S. M. Cornes, H. R. Holmes, W. J. O'Donnovan, B. C. Tate, J. W. Wigg, A. R. P. Ellis, S. A. Greenwood-Penny, T. A. B. Harris, J. C. Liston, J. Mason, J. G. Stewart, H. J. Hoyte, E. J. Selby, J. G. Bentley, R. E. Haswell, E. R. Coleman, M. T. I. Jones, R. E. Browne, C. L. Hay-Shunker, J. S. A. Knowles, W. C. Sloan, A. J. White, G. Carn, T. D Carson, J. N. Fell, D. R. Harbison, E. E. Bullock, M. J. Harker.

EMERGENCY COMMISSIONS

To be Lieutenants: L. Fletcher, H. M. Wright, R. B. C. Welsh, J. J. Murphy, J. Finnegan, G. M. B. Wadsworth, J. M P. Clark, R Kenefick, H. J. M. Robinson, J. G. Campbell, L. B. Blomfield, I. A. P. Smythe-Wood, E. R. Greathead, J. B. Stauffer, G. H. A. Simmons, R. N. C Smith, T. V. Somerville, H. C. Bamford, J J. Connolly, G. J. O'Connor, P. Unwin, R. P. Baird, A. D. Cuthbert, C. C Holm, J. P. O'Keefe, W. G. Pollard, D. J. Herrick, E. G. Fleming, and A. W. G. Sutherland.

ROYAL AIR FORCE MEDICAL SERVICE

The following Flight Lieutenants have been granted permanent commissions in that rank: C. C. Barker, J. R. Cellars, D. J. Dawson, G. B. MacGibbon, D. F. S. Shaw

AUXILIARY AIR FORCE: MEDICAL BRANCH

G. B. Hardman has been granted a commission as Flying Officer.

ROYAL AIR FORCE VOLUNTEER RESERVE: MEDICAL BRANCH

Squadron Leader J. G. Skeet, late R.A.F M.S., has been granted a commission for the duration of hostilities in that rank.

G. L. Keynes has been granted a commission as Group Captain for the duration of hostilities.

N. P. Henderson and T. K. Lyle have been granted commissions as Squadron Leaders for the duration of hostilities.

R. B. Bell, N. A. A. Cust, S. Rogers, P. Griffiths, D. M. Anderson, R. R. Foote, A. S. Lee, A. N. H. Peach, B. M. Phillips, J. G. Bate, J. R. Caldwell, K. V. Jackson, G J. Marks, and J. H. McElney have been granted commissions as Flying Officers for the duration of hostilities.

To be Flying Officer: R. J. Healey (name misspelt in the *Supplement* of October 21 (p. 209)).

E. G. Dermer has been granted a commission as Flight Lieutenant for the duration of hostilities.

REGULAR ARMY RESERVE OF OFFICERS

Colonel W. Mitchell, O.B.E., late R.A.M.C., has ceased to belong to the Reserve of Officers on account of ill-health

ROYAL ARMY MEDICAL CORPS

Lieutenant-Colonel S. S. Dykes having attained the age limit of liability to recall has ceased to belong to the Reserve of Officers.

Major E. L. Reid, M.C., Union Reserve of Officers, South African Medical Corps, to be Major.

Major P. M. J. Brett has ceased to belong to the Reserve of Officers on account of ill-health

Captains H. Webb, J. H. Barry, and S. R. M Mackay have ceased to belong to the Reserve of Officers on account of ill-health.

Lieutenant J. C. Paterson has resigned his commission.

SUPPLEMENTARY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS

Captain N. T. Nicholson has resigned his commission.

MILITIA

ROYAL ARMY MEDICAL CORPS

Major C. Atkinson has ceased to belong to the Militia on account of ill-health and has retained the rank of Major.

TERRITORIAL ARMY

Colonel J. P. Clarke, T.D., A.D.M.S., has relinquished his commission on account of ill-health and retained his rank with permission to wear the prescribed uniform.

ROYAL ARMY MEDICAL CORPS

Lieutenant-Colonels A. A. Eagger, J. A. Stenhouse, T D., H. V. Walsh, T.D., and W. Bowater, M C., from Territorial Army Reserve of Officers, R A.M.C., to be Lieutenant-Colonels.

Majors C J. Fox, H. Foxton, M.C., and G. M. Heiron from Territorial Army Reserve of Officers, R.A M.C , to be Majors.

Major J. Rowland, M.C., T.D. has relinquished his commission on account of ill-health.

Captain J. A. S. Brown, from Royal Artillery, T.A., to be Captain, with seniority March 18, 1932.

To be Captains: Captains J. H. Hovell, J. W. M. Sutherland, and B. D. Houston from Supernumerary for service with O.T.C. ; Captains S. G. Reed, S. C. Swinburne, H. B. Dodwell, R. E. Davie, M.C., and D. E. Denny-Brown from Territorial Army Reserve of Officers, R.A.M.C.

J. McG. Rogan to be Captain with seniority March 2, 1938.

Lieutenant P. Kennedy has ceased to hold a commission. (This announcement was wrongly recorded under Royal Army Medical Corps, Regular Army, in last week's *Supplement*.)

Lieutenant W. Gilmour has resigned his commission.

To be Lieutenants: Lieutenant E. A. Sparks, from Territorial Army Reserve of Officers, General List, R.A.M.C. ; Lieutenants A. C. S. Whiteway Wilkinson and C. A. Cromar from Territorial Army Reserve of Officers, R.A.M.C. ; Lieutenant I. Aird from Supernumerary for service with O.T.C.

To be Lieutenants: B. Holden, F. R. O. Hayward, J. E. Talbot, G. E. David, A. Somerville, A. V. Russell, J. H. Gilchrist, W. E. Reynolds, L. V. Arundel, and J. A. Wethered.

TERRITORIAL ARMY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS

Major R. Kennon, M.C., has relinquished his commission on ceasing to be employed.

Major W. Baxter has relinquished his commission on account of ill-health and has retained his rank with permission to wear the prescribed uniform.

Captain G. F. Shepherd has relinquished his commission on account of ill-health and has retained his rank with permission to wear the prescribed uniform.

Captain D. C. Graham has relinquished his commission and has retained his rank.

Captains D. Cameron and J. K. Davies have relinquished their commissions on account of ill-health.

Lieutenant G. C. Kelly has relinquished his commission on ceasing to be employed.

B.M.A. Branch and Division Meetings to be Held

EDINBURGH AND SOUTH-EAST OF SCOTLAND BRANCH: CITY OF EDINBURGH DIVISION.—The Scottish Eastern Association of the Medical Women's Federation is holding a meeting on Wednesday, November 22, at 3.30 p.m., at the Institute of Animal Genetics, Edinburgh, when a lecture-demonstration on "Modern Methods of Pregnancy Diagnosis" will be given by Professor F. A. E. Crew, F.R.S. The members of the association extend a cordial invitation to attend to members of the City of Edinburgh Division of the British Medical Association.

SUSSEX BRANCH: BRIGHTON DIVISION.—At Brighton Municipal Hospital, Elm Grove, Thursday, November 23, 3 p.m. Clinical meeting; 4.30 p.m., Annual General Meeting, election of officers, etc.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—*Daily*, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetrical and Gynaecological Clinics and Operations. *Daily*, 1.30 to 2 p.m., Post-mortem Demonstration. *Tues.*, 2.30 p.m., Lord Horder, Theatre Clinic. *Wed.*, 11.30 a.m., Clinico-pathological Conference (Medical); 2.30 p.m., Clinico-pathological Conference (Surgical). *Thurs.*, 2 to 4 p.m., Dr. Duncan White, Radiological Conference. *Fri.*, 2 p.m., Clinico-pathological Conference (Gynaecological).

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

Section of Surgery.—Wed., 2.30 p.m. Dr. J. Trueta: The Treatment of War Fractures by the Closed Method.

ROYAL SOCIETY OF ARTS, John Street, Adelphi, W.C.—*Wed.*, 2.30 p.m. Sir Leonard Hill, F.R.S.: The Penetration of Rays through the Skin and Radiant Energy for the Treatment of Wounds.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this heading is 9s. This amount should be forwarded with the notice, authenticated by the name and address of the sender, and should reach the Advertisement Manager not later than the first post Tuesday morning to ensure insertion in the current issue.

DEATH

MURRAY.—On November 4, 1939, suddenly at Rangoon, James Campbell Murray, L.R.C.P.I. and L.M., L.R.C.S.I. and L.M., of 64, Kelvin Court, Glasgow, W.2, late of Breffny, Queen Victoria Drive, Glasgow, W.4.—By cable.

At the annual meeting of the St. Helens Insurance Committee Dr. D. Campbell was re-elected chairman for the ensuing year.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 25 1939

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WAR NOTICES

1. THE EMERGENCY HOSPITAL MEDICAL SERVICE

The recommendations for the reorganization of the Emergency Medical Service, which were made to the Minister of Health by the Advisory Emergency Hospital Medical Service Committee established by the Central Emergency Committee, are as follows.

It is urged that, in the light of the experience gained and bearing in mind that the original assumptions upon which the service was founded may at any time come true, the Emergency Medical Service should be reorganized. It is recognized that the Ministry has already entered into a number of contracts for the period of a year and that it may not be desirable or practicable for the Ministry to modify these contracts. This consideration may necessitate postponement of the reorganization in some directions.

The following recommendations are put forward.

(1) The Ministry of Health should now, in consultation with hospital authorities and the Central Emergency Committee, (*a*) reconsider the number and distribution of beds authorized for the purposes of the Emergency Medical Service, and (*b*) determine a policy of staffing in relation to authorized beds.

(2) By application of this policy definite establishments for the different classes of officer in each grade should now be laid down.

(3) There should be three classes of officer in the reorganized Emergency Medical Service:

Class I.—Whole-time officers, resident or non-resident, who will not be permitted to engage in private practice. Officers in this class should be permitted, subject to the consent of the Ministry, to hold teaching, examining, and other academic appointments and receive fees therefrom.

Class II.—Part-time officers, resident or non-resident, who will be free to engage in private practice. Such officers will be liable for duty as and when required, the salary or retaining fee to cover all such duties.

Class III.—Part-time officers remunerated on a sessional basis.

Class I

(4) The authorized Class I establishments should be the minimum consistent with efficiency and comprise administrative officers, house officers, officers of the standing of registrars, resident surgical and medical officers, and other key officers.

(5) Class I officers within the authorized establishments should be called up on enrolment and employed and paid at the appropriate rates.

Class II

(6) (*a*) Under the new arrangement there would be eligible for appointment within the authorized establishment doctors of recognized consultant status—for example, those who are now enrolled or employed in Classes A (*d*) and (*e*) of the existing service.

(*b*) Those engaged under the new plan would receive a fee at the rate of £500 per annum from the Ministry for the balance of the period for which employment is contracted for under their present agreement. They would be expected in return for this fee to render all such services appropriate to their grade in the Emergency Medical Service as are required in connexion with the emergency hospital organization. No number of sessions per week or other limit would be laid down. They would be expected at all times to render as much service as might be necessary without any increase in remuneration.

(*c*) They would not be expected, as in the case of whole-time officers of the Emergency Medical Service, to accept a liability under the Emergency Medical Service to serve anywhere in the country. They would normally be attached either to a single hospital or to a group of hospitals, on the understanding that their services might be required in special circumstances at other hospitals within a reasonable distance.

(*d*) Officers not required to live away from home, and stationed at hospitals more than two miles from their homes, would be paid a travelling allowance related to both mileage and timage. Officers required to live away from home would receive free board and lodging, or £100 in lieu thereof. In order to avoid correspondence, etc., an attempt would be made to fix definite sums for travelling appropriate to radial distances from home, subject to review at reasonable intervals.

(*e*) A limited number of specialists would be expected to travel anywhere within the sector and possibly indeed outside it. Their travelling allowances would have to be adjusted accordingly.

(*f*) The Advisory Emergency Medical Service Committee would use its best endeavours to induce those at present enrolled on a whole-time basis at £800 and over to accept the new proposal. If individuals prefer to insist on the terms of their present contract the Ministry would be bound by it, in just the same way as those now serving whole-time are bound by the conditions of the contract, including the obligation to refrain from private practice.

(*g*) Class II officers, as they are liable for whole-time duty as and when required, should be entitled to official leave with pay, and to sick pay during temporary absence.

Class III

(7) Appointments should be made to Class III only where one or more of the following conditions obtain:

(*a*) Where a practitioner, not receiving a part-time salary or retaining fee, is called to attend to treat patients within the scope of the Emergency Medical Service at a local authority hospital with a resident medical staff.

(*b*) Where a practitioner, not receiving a part-time salary or retaining fee, is called to attend to treat patients within the scope of the Emergency Medical Service at a hospital in buildings specially adapted for the purpose, this hospital having a resident medical staff.

(*c*) Where a practitioner, not receiving a part-time salary or retaining fee, is called to attend to treat patients within the scope of the Emergency Medical Service at a hospital to which are attached Class I officers, other than house officers, undertaking clinical work.

(8) All practitioners not enrolled in Class I, II, or III treating at voluntary hospitals patients coming within the scope of the Emergency Medical Service should be remunerated in the following way:

The Government should add to the maintenance cost payable to the hospital under the existing arrangement an agreed amount in respect of medical services, other than those given by the resident medical staff, the hospital to pass such payments directly to the practitioner or practitioners undertaking the work, or to the hospital staff fund, or to a group staff fund, as the staff may desire.

(9) There should be special provision for payment in respect of mileage for Class III officers.

(10) (*a*) The Ministry should now decide, after consultation with the Central Emergency Committee and the Group Officer concerned, the establishment of house officers necessary to staff the beds officially authorized to be set aside for the purposes of the service in the grouped hospitals.

(*b*) The hospital authorities to which emergency house officers within the establishment are allocated should, in consultation with the Group Officer, make the necessary appointments, the Ministry paying such hospital authorities at the rate of £200 per annum per authorized house officer plus board and lodging.

(*c*) Hospital authorities would be free to pool the salaries of the house staff, including the amounts received from the Ministry in respect of emergency house staff, and apportion it between the house officers generally.

(*d*) The permissive arrangement set out in paragraphs (*b*) and (*c*) should be available to both voluntary and municipal hospitals. It may be necessary to make special arrangements in regard to the method of appointing house officers at a hospital established in a building not formerly used for general hospital purposes, but it is suggested that such officers might be "carried" on the staff of one of the main hospitals of the Group.

(*e*) The Central Emergency Committee would not recommend for appointment to the Services any practitioner within six months of registration. Hospital authorities would be asked to make their junior house appointments from practitioners within six months of registration and to limit those appointments in all cases to six months.

(*f*) There should be established a new category of practitioners in the Emergency Medical Service consisting of practitioners who have served for at least six months as house officers who have not been qualified for more than three years. Such senior house officers would be enrolled individually by the Ministry as members of the service and paid at the rate of £350 a year, plus board and lodging.

Minister's Reply

The Minister has indicated his general agreement with the recommendations, subject to the following observations.

1. The establishment of Class I officers will consist of a nucleus staff, the size of which will be determined by the minimum requirements of each hospital, having regard to its character and the part which it is intended to play in the emergency scheme. It will be clearly understood that in the case of these officers the requirement not to engage in private practice must be strictly observed.

2. In the case of Class II officers, to whom a part-time salary of £500 a year is to be paid, the establishment will be determined on the basis that only part-time work will be required at present, but it is understood that if hostilities should become so intensified as to require prolonged additional work, no claim for additional remuneration will be made. In so far as there are vacancies in the Class II establishment for officers who have been or may hereafter be enrolled for whole-time service but not called up, they will be eligible for employment on the same terms as those already serving. In the event of whole-time officers being transferred to Class II the above arrangements will continue in operation for the remainder of the period for which employment was guaranteed under the terms of their original contracts.

3. Where Class II officers who have served for three months are absent on leave or through sickness no deductions will be made from their salary on that account, but it is understood that other officers serving in the Emergency Medical Service will act as their substitutes and perform duty without claim for extra remuneration.

4. The travelling allowances for Class II officers will be fixed, in consultation with the Advisory Committee, having regard to radial distances in excess of two miles from their homes and to other relevant circumstances.

5. The arrangement proposed in recommendation 8 (that is, remuneration of medical staff by an addition to the payments now being made to hospitals) would not operate in hospitals where Class I officers (other than administrative or house officers) or Class II or III officers were employed. In fixing the rate of payment to the hospital it is necessary to take account of the types of cases for which the Emergency Medical Service is employed, the number of such cases likely to be found in any one hospital, the equivalent salaries of whole-time officers, and a number of other factors. The Minister is prepared to fix a flat rate in payment for medical services of 1s. 6d. per day (that is, 10s. 6d. per week) per bed occupied by a case within the scope of the Emergency Medical Service. Provision will be made for payment for medical services rendered at out-patient departments in the same class of hospital by adding 6d. to the sum payable for each out-patient attendance. It will be appreciated that in addition the cost of the services of any house officers employed on a salaried basis would fall upon the Department either by direct payment or by inclusion in the hospital's emergency costs.

6. In applying the pooling arrangements proposed for house officers, officers seconded to hospitals (including municipal institutions) other than those by which they were appointed may be regarded as belonging to the latter hospitals.

7. The appointments at £350 a year referred to in recommendation 10 (*f*) would be strictly limited in number, and house officers would have no right to succeed automatically to them on the termination of their house appointments.

8. The classes of case for which the Emergency Medical Service are employed are as follows:

(1) Civilian casualties arising in Great Britain from hostile attack. (Injured persons taken from ships damaged by enemy action will be included.)

(2) Casualties from H.M. Forces and Women's Organizations attached thereto. (These include all cases of injury whether or not caused directly by enemy action or whether arising in this country or outside.)

(3) Sick from H.M. Forces, etc., as above, whether arising in this country or not.

(4) Prisoners of war (and interned persons), whether sick or injured.

(5) Police casualties and sick.

(6) Unaccompanied children evacuated under the Government evacuation scheme. (This does not cover other evacuated classes who are the responsibility of the local authority in so far as they do not make their own arrangements for treatment.)

(7) " War Service " injuries. (These are accidents incurred by civil defence volunteers as defined in the Ministry of Pensions scheme, if the accident occurs in the performance of their duty.)

(8) Patients, not in any of the above categories, transferred from one hospital to another under the Emergency Hospital Scheme by arrangement with the Hospital Officer (the " transferred sick ").

9. Consideration has also been given to the position of officers who are now serving full-time with the Emergency Medical Service but who, although called up by the Group Officers, had not entered into written contracts. The Minister will regard these officers as employed on the same terms as those who have entered into written agreements, provided that they are now prepared to enter into such an agreement. The same options will then be open to them as if they had been serving under such an agreement from the beginning.

The Advisory Emergency Medical Service Committee has accepted the position as set out in the Minister's reply, on the understanding that the rate of 1s. 6d. a day in paragraph 5 of the Minister's observations is without prejudice to what should be a proper figure in peace time, and that the position will be reviewed in the light of experience for the period ended June 30, 1940. It urges practitioners concerned to accept the terms and conditions of the reorganized Service.

2. MEDICAL STAFFING OF FIRST-AID POSTS

In response to the representations made by the British Medical Association to the Minister of Health and described in earlier issues of the *Supplement* on the subject of the medical staffing of first-aid posts, the Minister has replied in the following terms.

1. A medical officer should be in complete charge of each first-aid post instead of being only responsible for the training of the personnel as he is under present arrangements. At present the medical officer of health is directly responsible for all the posts in his area, but it is desirable that there should be a definite link in the chain of command between him and the first-aid posts as they are now functioning.

2. The staffing arrangements are, in the first instance, a matter for the local authority to propose as part of their first-aid post scheme, but the Minister will ask them to arrange for the medical officers at present assigned to the posts or, if they are unwilling, other practitioners selected for the purpose, to undertake complete charge of the post, supervising not only the volunteer personnel but also the trained nurse, even if she is an officer of the local authority. They would continue to conduct the collective training of the personnel on the lines indicated in Circular 1831 dated June 22, 1939; they would also undertake the responsibility for stores and the general maintenance of the post and any correspondence on administrative matters relating to the post, so that they would, in effect, be acting as temporary officers of the local authority. In order to keep the post and the personnel properly under supervision they would be expected to visit the post at least three times a week and to be prepared to attend during an actual air raid if required. One or more other doctors might also be retained to attend during a raid, but they would have no responsibility for the general supervision of the post.

3. The above arrangements would apply only to the more vulnerable areas—that is, those specified by the Minister of Home Security under Part III of the Civil Defence Act, 1939. Mobile first-aid posts in these areas would be included in the arrangements.

4. Local authorities will be authorized to pay a salary at the rate of £75 a year for each aid post in consideration of the performance of duties as set out above, the employment being for six months in the first instance, subject to a month's notice on either side. In addition, in the event of the doctor being required to attend the post owing to an actual air raid upon the locality, sessional fees would be payable at the rates already agreed upon—namely, one and a half guineas for a session of not more than two hours and three guineas for a session of longer duration.

5. Further, as it is understood that on the outbreak of war medical officers were in some instances required by the medical officers of health to attend their posts on a sessional basis notwithstanding the non-occurrence of raids, the payment of sessional fees will be authorized in cases where sessional attendances were required and given before the receipt of Circular 1869 issued on September 9, 1939.

6. The financial arrangements which are described would be in substitution for the payment of twenty guineas already in operation, the necessary adjustment being made as at the date from which the change of duties comes into operation.

7. In case of first-aid posts situated at hospitals these arrangements would be modified to suit the circumstances.

In areas not covered by this scheme it is understood that the existing authority to employ medical officers to supervise collective training at 20 guineas a year will continue in force.

The Central Emergency Committee has approved the proposed new arrangements.

3. SPECIALISTS AND THE SERVICES

In the War Notices in the *Supplement* of September 16 (p. 181) it was stated that medical practitioners appointed as specialists to the R.A.M.C. would, on appointment to a hospital post, be granted the rank of major. This has given rise to some misunderstanding, and it is desirable to point out that the rank of acting major is granted only to those practitioners *appointed as specialists* to posts within the authorized establishment.

CENTRAL EMERGENCY COMMITTEE
(Central Medical War Committee),
British Medical Association House,
Tavistock Square, W.C.1.

Suggestions for improving the working of the evacuation scheme and for lightening the burden of hosts in the reception areas are made by the Minister of Health, Dr. Elliot, in a communication to local authorities. Three ways of helping the householder are suggested: (1) By communal meals and out-of-school activities for the children; (2) where possible, by a redistribution of billeting; (3) by greater consideration on the part of parents, particularly those who expect free hospitality from the householder when they visit their children. Applications from some householders to be relieved of their burden, at least temporarily, should be sympathetically considered and, so far as possible, met.

TWO NEWSPAPERS APOLOGIZE

Under the heading "The Banned Doctor" the following "news story" appeared in the *Sunday Pictorial* of November 5, 1939:

> "Because they do not belong to the British Medical Association, or have not rendered 'past services' to the Association, 23,000 doctors, it is declared, may never get a chance of serving with the Forces.
>
> These doctors, according to men prominent in the medical profession, are victims of one of the greatest ramps and profiteering scandals of the war.
>
> Doctors are recruited for the three Forces—Army, Navy, and Air—through the B.M.A. Applications for commissions are first made to local committees of the Association.
>
> 'Unless a doctor belongs to the B.M.A.,' a well-known West End doctor told the *Sunday Pictorial*, 'his application to serve is most likely just filed and conveniently forgotten.'
>
> The West End doctor cited two instances of how 'favouritism' operates in certain cases.
>
> Two doctors have a good practice. They have each been awarded five 'Boards' a week for examining recruits.
>
> 'For each Board they receive £2 2s. Thus their practice is richer by £21 a week.'
>
> 'JOBS KEPT OPEN.'
>
> Another man who practised dentistry, but never touched medicine, has been appointed as a qualified examiner.
>
> Meanwhile, other doctors see their incomes rapidly depleted as the result of evacuation and the calling up of men.
>
> 'It is a scandal that Government money should be used by an association for the payment of past services,' said the West End doctor. 'But that is happening.
>
> 'Certain local branches of the B.M.A. are keeping jobs open nicely for their members.'
>
> Of 60,000 doctors in this country, the B.M.A. claim 37,000 as members."

On November 19 the *Sunday Pictorial* published the following statement:

British Medical Association

An Apology

> "The news story entitled 'The Banned Doctor,' published in our issue of November 5, reflected on the British Medical Association by alleging that the Association in selecting doctors for the various forms of National Service was discriminating unfairly against doctors who were non-members or who had not rendered 'past services' to the Association.
>
> There is no justification for these allegations.
>
> We find on investigation that the Association is completely impartial, offering to non-members and members alike the same opportunities for service. We desire to express to the Association and to those responsible for the administration of the Central Medical War Committee our apologies and sincere regret for having published such statements."

A shorter form of the offending news story appeared in the *News Review*, which has since published an apology on lines similar to that in the *Sunday Pictorial*. These two newspapers have agreed to pay the Association's legal costs and, in addition, a sum of 100 guineas in the case of the *Sunday Pictorial*, and a sum of 50 guineas in the case of the *News Review*. The 150 guineas thus paid to the Association is being forwarded as a contribution to the Lord Mayor's Fund for the British Red Cross.

Assurance for Doctors

Cars used for Civil Defence

An announcement indicating a radical rearrangement of the position with regard to motor cars used for civil defence has now been made by insurance companies and underwriters in collaboration with the Home Office. The material points are as follows: The individual policy no longer covers the use of cars for civil defence, and persons using their cars for this purpose should acquaint themselves with the position.

Full-time Usage.—Owners should immediately get in touch with the local authority concerned, who will be aware of the details of the special policy to be issued, and should arrange with the authority whether the existing policy is to be converted or a new policy, usually at a flat rate of premium, is to be taken out. If a new policy is taken out by the authority the companies have agreed to a *pro rata* return of premium under the original policy.

Part-time Usage.—Instructions have been given to local authorities to take out "block" policies covering the cars of all their part-time workers, the premium not to exceed £2 per vehicle. Here again the policy-holder should get in touch with the local authority to make sure that the necessary arrangements are made for his car to be included under the general scheme. The insured will, of course, be protected under the "block" policy while engaged on civil defence work and under his own normal policy at other times. The owner will have this advantage, that should he meet with an accident while on civil defence work the no-claim bonus under his own private policy will not be invalidated. The premium on the "block" policy is payable by the local authority.

This scheme has already come into operation, but it is doubtful whether all the members affected under the Civil Defence Services are familiar with it. Any person who is uncertain of his position is recommended to take up the matter with the local authority employing him, and any other information can be obtained from the Medical Insurance Agency, B.M.A. House, Tavistock Square, W.C.1.

Correspondence

Notification of Measles and Whooping-cough

SIR,—As the Ministry of Health has not seen its way to agree to the fee of 2s. 6d. for the notification of measles and whooping-cough, I suggest that they be informed that unless that fee is agreed to the B.M.A. will instruct all members to refuse to notify these diseases until such time as the fee is accepted by the Ministry. If we allow this to pass and accept a fee of 1s. there is not the slightest doubt that in a very short time the fees for other notifications will be reduced to the same figure.

Considering the increased cost of living and increased taxation it would be more to the point if all notification fees were increased by 1s. each.—I am, etc.,

Wetherby, Nov. 11. S. T. PYBUS, M.D.

SIR,—Is it not possible for the profession for once to make a firm stand against this imposition by the Minister of Health? I refer to the fee of 1s. for notification of cases of measles and whooping-cough throughout the country. Upon what grounds is the Minister making this reduction in fee? With living expenses rising upon every hand and no corresponding increase in the capitation fee for panel patients, what right, I ask, has the Minister to do this?

Now surely there are no men in the profession so without that sense of loyalty to each other that they would refuse to join in an active and practical protest against this unjust imposition? Surely it is possible just for once for us all to stand together and as a body refuse to sign one single notification until the full normal fee of 2s. 6d. is restored. The Council of the Association has stated its disagreement with the fee and will surely back us up. Therefore if only we are sufficiently determined to resist what is only too likely to be the thin end of the wedge we can prevent this type of exploitation.—I am, etc.,

Ludlow, Nov. 15. VICTOR N. FENTON.

⁂ The Secretary of the British Medical Association states that the Association has been assured that this fee of 1s. will not apply to other diseases which are at present notifiable.

AIR RAID CASUALTIES

Dr. J. Trueta, late Director of the Department of Surgery, General Hospital of Satalunya, Barcelona, will give an address on "The Medical and Surgical Assistance of Minor Injuries in Bombarded Towns" in the Great Hall, B.M.A. House, Tavistock Square, W.C.1, on December 5, 1939, at 2.45 p.m. The address has been arranged by the City Division of the Metropolitan Counties Branch of the B.M.A., and all members of the Branch are invited to attend.

British Medical Association

OFFICES, BRITISH MEDICAL ASSOCIATION HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

Addresses, etc.

SECRETARY (Telegrams: Medisecra Westcent, London).

EDITOR, BRITISH MEDICAL JOURNAL (Telegrams: Aitiology Westcent, London).

SUBSCRIPTIONS, ADVERTISEMENTS, etc. (Telegrams: Medisecra Westcent, London).

Telephone number of British Medical Association and British Medical Journal, Euston 2111 (internal exchange, six lines).

SCOTTISH SECRETARY: 7, Drumsheugh Gardens, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 24361 Edinburgh.)

Cumann Doctúirí-na h-Éireann (I.M.A. and B.M.A.): 95, Merrion Square, W., Dublin. (Tel.: 62550 Dublin.)

Areas of Stockport and Macclesfield and East Cheshire Divisions

With reference to the preliminary notice which appeared in the *Supplement* of October 21 (p. 210), notice is hereby given by the Council of the British Medical Association to all concerned that as from the date of this notice the urban district of Cheadle and Gatley is transferred from the area of the Stockport Division to that of the Macclesfield and East Cheshire Division.

G. C. ANDERSON,
Secretary.

Branch and Division Meetings to be Held

GLOUCESTERSHIRE BRANCH.—Clinical meetings of the Branch have been suspended until further notice.

METROPOLITAN COUNTIES BRANCH: CITY DIVISION.—At B.M.A. House, Tavistock Square, W.C., Tuesday, December 5, 2.45 p.m. Dr. J. Trueta: "The Medical and Surgical Assistance of Minor Injuries in Bombarded Towns."

SOUTHERN BRANCH: ISLE OF WIGHT DIVISION.—At Isle of Wight County Mental Hospital, Whitecroft, Newport, Tuesday, November 28, 3.15 p.m. Lecture by Dr. Stanley White: "Recent Advances in the Clinical Applications of the Sex Hormones."

Meetings of Branches and Divisions

DORSET AND WEST HANTS BRANCH: BOURNEMOUTH DIVISION

At a meeting of the Bournemouth Division, held at Boscombe Hospital on November 8, with Mr. S. GORDON LUKER in the chair, Sir KAYE LE FLEMING and Dr. WALTER ASTEN reported on the Annual Representative Meeting at Aberdeen in July. Dr. O. C. CARTER then gave an address on "The Local Emergency Committee and its Work," and Sir KAYE LE FLEMING referred to the work of the Central Emergency Committee. It was agreed to hold the next meeting of the Division on January 24.

SUSSEX BRANCH: WEST SUSSEX DIVISION

At a meeting of the West Sussex Division held on October 25, with Dr. C. GIBSON in the chair, Dr. DONALD HALL (Brighton) read a paper on "Functional Derangements of the Heart" and showed radiographs of various heart conditions. After supper a discussion on the paper was opened by Dr. MORLEY FLETCHER and was continued by several other members.

LIBRARY OF THE B.M.A.

It is requested that members of the B.M.A. proceeding on service will return all library books and journals.

The Library service is one of the privileges available to members of the British Medical Association resident in Great Britain and Ireland. Full particulars will be forwarded on application to the Librarian, B.M.A. House, Tavistock Square, London, W.C.1.

The following volumes were added to the Library during September.

Alstead, G.: Studies on the Changing Incidence of Peptic Ulcer. 1939.
Ashdown, A. M.: Complete System of Nursing. 1939.
Baumgartner, L.: John Howard (1726–1790), Hospital and Prison Reformer: A Bibliography. 1939.
Behan, R. J.: Relation of Trauma to New Growths. 1939.
Blech, G. M.: Clinical Electrosurgery. 1938.
Bremer, G.: Effect of Denervation on Teeth in Monkey and Dog. 1938.
Chalmers, C. H.: Bacteria in Relation to Milk Supply. Second edition. 1939.
Clendening, L.: Workbook in Elementary Diagnosis. 1938.
Dutta, P. C.: Modern Advances for Rural Practice. 1938.
Fifield, L. R.: Infections of the Hand. Second edition, by P. Clarkson. 1939.
Giroud, A., and Lelièvre, A.: Eléments d'Embryologie. 1938.
Gordon, R. G. (Editor): Survey of Child Psychiatry. 1939.
Griffith, E. F.: Childless Family. 1939.
Gutheil, E. A.: Language of the Dream. 1939.
Hewer, C. L.: Recent Advances in Anaesthesia and Analgesia. Third edition. 1939.
Jahier, H.: Le Syndrome Hémorrhagie du Nouveau-né. 1939.
Just, E. E.: Biology of the Cell Surface. 1939.
Lane-Roberts, C., *et al.*: Sterility and Impaired Fertility. 1939.
Lefèvre, J.: Manuel Critique de Biologie. 1938.
McCollum, E. V., Orent-Keiles, E., and Day, H. G.: Newer Knowledge of Nutrition. Fifth edition. 1939.
Mann, F. G., and Saunders, B. C.: Introduction to Practical Organic Chemistry. 1939.
Marshall, C. M.: Caesarean Section. 1939.
Mellone, S. H.: Bearings of Psychology on Religion. 1939.
Morris, H.: Physiotherapy in Medical Practice. 1939.
Nevin, N., and Puterbaugh, G.: Conduction, Infiltration, and General Anaesthesia in Dentistry. Fourth edition. 1938.
Nobécourt, P., and Babonneix, L.: Les Enfants et les Jeunes Gens Anormaux. 1939.
Parkinson, R. H.: Eye, Ear, Nose and Throat Manual for Nurses. 1939.
Porcher, P.: Précis de Technique Radiographique. 1938.
Randell, M.: Training for Childbirth. 1939.
Robinson, C. G.: Patient as a Person. 1939.
Roxburgh, A. C.: Common Skin Diseases. Fifth edition. 1939.
Rural Medicine: Proceedings of the Conference held at Cooperstown, New York, 1938. 1939.
Sclare, I. M.: Mental Nursing in Observation Wards. 1938.
Thomson, G. H.: Factorial Analysis of Human Ability. 1939.
Treves, Sir F.: Surgical Applied Anatomy. Tenth edition by L. Rogers. 1939.
Weyer, F.: Die Malaria-Überträger. 1939.
Williams, J. F.: Textbook of Anatomy and Physiology. Sixth edition. 1939.
Witherspoon, J. T.: Clinical Pathological Gynecology. 1939.

Postgraduate News

The Fellowship of Medicine announces the following postgraduate courses to be held in preparation for the F.R.C.S. (Final) Examination in February, 1940: comprehensive course, including clinical instruction, in the wards and out-patient department, lectures, *x*-ray and museum demonstrations, and tutorial classes (including answering set questions). The course will be given from December 11, 1939, to January 27, 1940 (excluding Christmas holidays), from 9.30 a.m. to 1 p.m. Mondays to Fridays, and 11 a.m. to 1 p.m. Saturdays. Short courses in pathology will also be given, each consisting of two demonstrations (in the same week) from 2 p.m. to 3.30 p.m., and limited to six postgraduates. The course will be repeated every week until the examination (for fresh classes of six postgraduates) if there is sufficient demand. No postgraduate may attend more than one course.

A short course in tropical medicine and hygiene, lasting six weeks, will begin at the London School of Hygiene and Tropical Medicine on Monday, January 8, 1940, at 10 a.m. The fee will be ten guineas. Although certificates of attendance will be given, the course will not in any way qualify for admission to the examination for the Diploma in Tropical Medicine and Hygiene. It is intended that the classes will be held in the school premises in Keppel Street, W.C., but in the event of war conditions making this impossible arrangements have been made to transfer teaching to the school's branch institute at St. Albans. Similar courses will be held from time to time during the year should sufficient applications for admission be received. Inquiries should be addressed to the secretary, London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1.

WEEKLY POSTGRADUATE DIARY

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.—*Daily,* 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetrical and Gynaecological Clinics and Operations. *Daily,* 1.30 to 2 p.m., Post-mortem Demonstration. *Mon.,* Beginning of course for Final F.R.C.S. *Tues.,* Lord Horder, Ward Clinic. *Wed.,* 11.30 a.m., Clinico-pathological Conference (Medical); 2.30 p.m., Clinico-pathological Conference (Surgical). *Thurs.,* 2 to 4 p.m., Dr. Duncan White, Radiological Conference. *Fri.,* 2 p.m., Clinico-pathological Conference (Gynaecological).

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—*Brompton Hospital,* S.W.: Mon. and Wed., 4.30 p.m., M.R.C.P. Course in Chest Diseases.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

Section of Odontology.—Mon., 2.30 p.m. Paper by Professor A. Fleming: Antiseptics and Chemotherapy. Short communication by Dr. A. J. Cokkinis: Sulphonamide Chemotherapy and its Effects on Gingivitis and Pyorrhoea.

Section of Otology.—Fri., 10.30 a.m. Discussion: The Transmeatal Approach to the Mastoid. Openers: Dr. G. B. Brand, Mr. Walter Howarth, Mr. G. Bateman. Cinematograph film. Mr. John Gerrie: The Transmeatal Approach to the Mastoid.

Section of Laryngology.—Fri. 2.15 p.m. (Cases at 1.30). Clinical meeting: Cases will be shown illustrating the various forms of orbital complications of sinus disease, with a view to discussing whether the advent of sulphanilamide should modify the approach to the case.

Section of Anaesthetics.—Fri., 2.30 p.m. Paper by Dr J F. Taylor: Status Lymphaticus

ROYAL INSTITUTION, 21, Albemarle Street, W.—*Tues.*, 2.30 p.m., Sir Frederick Keeble, F.R.S.: Food Production in War Time.

Naval, Military, and Air Force Appointments

ROYAL NAVAL VOLUNTEER RESERVE

To be Temporary Surgeon Lieutenants: W. A. Hutton, N. W. Pryde, A C. K. Yates, P. W Houghton, E Elmes, N. J Haggar, J. W. Shield, M G. Low, R. Jackson, J. D. Sidey, H. A. R. Hamilton, J. W. Ashley, W H A. Picton, E R. L. Davies, J. G. Bryson, D F. Heath, and D. Bennett.

Probationary Surgeon Lieutenant R. J. C. Sutton to be Surgeon Lieutenant, with seniority October 19, 1938.

ROYAL ARMY MEDICAL CORPS

Emergency Commissions

To be Lieutenants: J. C. Bell, D Dean, F. Porter-Smith, J. L. Gilloran, A H Imrie, R. McCombe, J. M. Ritchie, P C. Robertson, G. K. Wood, W Giles, J. B Harrower, B. A. Moss, R. C L'E Burges, J. Baird, G S. Broadbent, R. L. Boutne, D M Carding, G Christie, E. B. Davies, P. J. Honan, W. Wilson, D. G. Robinson, A. T. Hastie, W. G. T. McFie, T. B. Bailey, M R. Joseph, A. McDonald, J W. Dowzer, C. S. Hemming, J. A Chamberlin, H. C Calvey, J W P Collier, W. Finlay, J. Hodge, J P Kilty, E J. O'Loughlim, M C. Dickson, T G. Anderson, J D Durance, C V. Spark, J. Sinclair, D E. Bedford, H. R. Miller, K. C Burrow, C E. Burley, W. H. D Davies, A D. Aveling, A. T Rogers, G Forrest-Hay, S Boan, J. Lavery, G Williams, W. F. Green, P. T. Harper, S Dobbin, E. E. Prebble, W. L Ackerman, A. G. Aitkin, H. A. Mullen, R. W. M. Strain, G W. Reid, G D Park, B. J. Harries, I. F Rose, C. L. Carter, H S. Hamlin, J. R Dickinson, J. D. Horsburgh, T S Severs, T. M. Doran, A. N. Mathias, G. K. Kirwan-Taylor, J. H. Neill, W R. Topping, S. C. Truelove, R. H Baird, S. Grodd, R. J. Milbank, L. J. Blay, J F H. Bulman, J. M. Duff, E C. Fernandes, E L. Fawssett, W. N. McArthur, D. P. McCoy, W. J Ramsay, A. Stuart, R. J. K. Tallack, G. A. Moulden, J Morrice, W. O'Brien, K. C. S. Skene, E. L. Williams, M. W. Archdall, F W Boon, C. England, T. F. Fox, J. A. Kilpatrick, W. J. Abel, W. Dunlop, W. Ellis, I. H. Flack, I. W. Gallant, A. E M Hartley, G. L. St. A McClosky, D. Billig, G. Geddes, J. Stirling-Gilchrist, H. R. Hartnel, J. W. S. Irwin, H. T. Levi, E. St J. Seelly, G. R. Yarwood, J. Fahy, J. C. Johnston, S. Hales, N. H. Allen, J. Millar, W. P. Blackstock, F. G. Kerr, N C. Rogers, F. W. Rawlings, J. J Kennedy, E. Bolton, E. L. Farquharson, J. T. O'Leary, W. Allen, H. I. Jones, J. A. Trewick, A. A. Byrne, D J. Edwards, G A. Flann, A. A H. Gailey, W R Gemmell, G W. V. Greig, J. Harper, J. B. Heycock, A C S. Hobson, J. G. S. Holman, J. A. Inglis, W. L. Jones, J. H. Lawrence, J. A. H. McClelland, J. M McInnes, J. A. Mark, A. D. Milne, L. H G. Moore, C. Moss, D. F. O'Neill, T. B Rees-Roberts, T. G. Rewcastle-Woods, W. Smith, J A. Strong, C. Taylor, J. P. B. Ball, R. S. Dale G. W. Newton-Dunn, M. A. Imray, C. D. Macrae, G. A. Owen, D. C. Porter, J E. Symondson, S. C. Wake, N. P. Woodgate-Jones, P. Baker, H. G. Burford, J. L. Hart, J. M Holmes, F. G. Leslie, H. G. Poles, A. C. Rumsey, N. E. Montewcis, W. G. Brown, R. C. Droop, T C. Gilliland, E. W. Hart, R. S. Lewis, L. A. Willmot, H S. Lanceley, W. G. V. Said, J. A. Edward, A. M. Davidson, F. Austin.

Auxiliary Air Force: Medical Branch

J. Cann has been granted a commission as Flying Officer.

Royal Air Force Volunteer Reserve: Medical Branch

C. P. Symonds to be Group Captain for the duration of hostilities.

R. D. Gillespie to be Wing Commander for the duration of hostilities.

P H Lomax, R G D Forward, D. H. Fowler, B. A. E. Harley, J North, S. F. Robertson, S. Segal, F. N. Shuttleworth, and D. Turner have been granted commissions as Flying Officers for the duration of hostilities.

REGULAR ARMY RESERVE OF OFFICERS

Royal Army Medical Corps

Captain (Brevet Major) J. Gilmour, C.M.G., M.C., having attained the age limit of liability to recall, has ceased to belong to the Reserve of Officers.

TERRITORIAL ARMY

Colonel L. E. H. Whitby, C.V.O., M.C., from Territorial Army Reserve of Officers, R.A.M.C., to be Colonel.

Colonel C H S. Redmond, T.D. having attained the age limit, has retired and retained his rank, with permission to wear the prescribed uniform.

Royal Army Medical Corps

Majors C E. Kindersley, H. J Heathcote, P. W. McKeag, and G W. Wigg, T.D., from Territorial Army Reserve of Officers, R.A.M.C., to be Majors.

Majors J. H. Blackburn, M.C., and L. N. Jackson, M.C., have relinquished their commissions on account of ill-health.

Captain (Brevet Major) J. E McCartney to be Major.

Captains H. A. Eccles, A. McCampbell, E H. Brindle, E. M. R. Frazer, and A V Mackenzie, M.C., to be Majors.

Captains H. G. Neill and E. A Downes from Territorial Army Reserve of Officers, R.A.M.C., to be Captains.

Lieutenant H. R. Shields to be Captain, with seniority April 26, 1938.

Lieutenants R. S. F. Schilling, R. Brown, A. Browning, B. St. J. Steadman, J. Clay, and H R W. Lunt to be Captains.

Lieutenant H. R. Vernon from Territorial Army Reserve of Officers, R.A.M.C., to be Lieutenant.

Lieutenant H W. Whitcher from Infantry Unit, Edinburgh University Contingent, Senior Division, O.T.C., to be Lieutenant.

W. E Johnston and W. E. G Bradford to be Lieutenants

Second Lieutenant A. E Stevenson from Territorial Army Reserve of Officers, General List (Infantry), to be Lieutenant.

Territorial Army Reserve of Officers: Royal Army Medical Corps

Captains G. G. Johnstone, M.C., and G. M. Miller, M.C., have relinquished their commissions on account of ill-health.

INDIAN MEDICAL SERVICE

Colonel D. H. Rai, M.C., has been appointed as officer on special duty in the office of the Director-General, Indian Medical Service, as from October 9 or any subsequent date on which he assumed charge of his duties.

Lieutenant-Colonel T. C. Boyd to be Colonel, with seniority February 1, 1931.

Lieutenant-Colonels K. S. Thakur and M. A. Nicholson have been advanced to the List of Special Selected Lieutenant-Colonels.

The Central Government has nominated Lieutenant-Colonel W. C. Paton, M.C., Inspector-General of Civil Hospitals and Prisons, North-West Frontier Province, to be a member of the Medical Council of India, from the North-West Frontier Province, as from October 3.

Lieutenant-Colonel W. J. Webster, M.C., has been appointed as Assistant Director, Central Research Institute, Kasauli, with effect from October 1.

Lieutenant-Colonel W. P Hogg, M.C., Chief Medical Officer and Inspector-General of Prisons in Baluchistan, has been granted leave on average pay for three months and ten days, under the Fundamental Rules, with effect from August 23

Major E O'Connor, an Agency Surgeon, has been employed to officiate as Chief Medical Officer and Inspector-General of Prisons in Baluchistan with effect from August 23.

Major W. T. Taylor has taken over charge of the Medical Store Depot, Madras, with effect from September 4.

Captain R. L. Haviland-Minchin, Assistant Director, Central Research Institute, Kasauli, has been appointed a leave reserve officer against the Central Indian Medical Service cadre, with effect from October 1.

Captain G W. Millar has been attached to the Port Health Department, Bombay, as a leave reserve officer under the Central Government, from July 21 to July 31, and has been appointed to officiate as Port Health Officer, Bombay, from July 31, 1939, until further orders.

Captain (on probation) G C. A Jackson has relinquished his probationary appointment on account of ill-health.

Lieutenant Thein Maung to be Captain.

COLONIAL MEDICAL SERVICE

The following appointments are announced: R. B T. Baldwin, M.R.C.S., L.R.C.P., Medical Officer, Nigeria; A. L de P Carnegie, M.B., Ch.B., Medical Officer, Jamaica; J. W P. Harkness, O.B.E., M.B., Ch.B., D.P.H., Director of Medical Services, Gold Coast; J O. Poynton, B.Ch., Pathologist, Institute for Medical Research, Federated Malay States; W. L. Webb, M.B., B.S., D.P.H., Senior Medical Officer, St. Vincent.

VACANCIES

Examining Factory Surgeons.—The following vacant appointments are announced: (1) Leeds West and Farsley (Yorkshire, West Riding). (2) Beverley (Yorkshire, East Riding). Applications to the Chief Inspector of Factories, Home Office, Whitehall, S.W.1, by December 4.

Medical Referee under the Workmen's Compensation Act, 1925, for the West Hartlepool County Court District (Circuit No. 2). Applications to the Private Secretary, Home Office, Whitehall, S.W., by December 3.

APPOINTMENTS

Armstrong, C. N., M.D., B.S., B.Hy., D.P.H., M.R.C.P., Honorary Physician, Royal Victoria Infirmary, Newcastle-upon-Tyne.

Illingworth, R. S., M.D., D.P.H., D.C.H., M.R.C.P., Nuffield Research Student in Medicine, Radcliffe Infirmary, Oxford.

Morgan, A W. J., M.R.C.S., L.R.C.P., D.P.H., District Medical Officer, Khargpur, Bengal Nagpur Railway, Bengal.

Nicol, C. Grant B.M., B.S., D.P.H., Assistant County Medical Officer and Medical Officer of Health for Uttoxeter Urban and Rural District Councils.

Examining Factory Surgeons.—F. H. E. Beckett, M.R.C.S., L.R.C.P., for the Manningtree District (Essex); R. G. R. Burrows, M.B., B.Ch., for the Melling District (Lancashire), D Craig, M.D., for the Stanford-le-Hope District (Essex); D. B. Davies, M.B., Ch.B., for the Kidwelly District (Carmarthenshire); A. N. Jackson, M.D., for the Handsworth District (Yorkshire, West Riding).

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this heading is 9s. This amount should be forwarded with the notice, authenticated by the name and address of the sender, and should reach the Advertisement Manager not later than the first post Tuesday morning to ensure insertion in the current issue.

BIRTHS

Monro.—On November 17, in Singapore, to Landon Carter (*née* Reed) and J. K. Monro, M.Ch., a son

Vollam.—On November 14, to Dr. and Mrs. F. Harman Vollam (*née* Eleaner Davis), at Cornhill, Rubery, a daughter.

DEATHS

Cunningham.—On November 10, 1939, very suddenly, at 29, Wilbury Road, Hove, Francis William Murray Cunningham, D.S.O., F.R.C.P.Ed., M.R.C.P.Lond., Senior Honorary Physician, Royal Sussex County Hospital Aged 55. Beloved husband of May Cunningham, son of the late William Murray Cunningham, W.S., of Glasgow, and of Mrs Cunningham, now of Hove.

McDonald.—At Belford Villa, Belford, Northumberland, on November 19, 1939 Mima Raugh, wife of James McDonald, M.D.

Prout.—On November 18, 1939, at Manor House, Lingfield, Surrey, Lieut.-Colonel Sir William Prout, K.C.M.G., O.B.E., M.B., C.M.

The chairman, Dr. J. Gordon Hume, and members of the medical board entertained to dinner at the Trocadero Restaurant on November 9 the officers and staff of the Artists Rifles, at whose depot the applicants for commissions were examined. The local medical board was instituted by the Emergency Committee of the St. Pancras Division of the British Medical Association.

SUPPLEMENT TO THE

BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 2 1939

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WAR NOTICES

The Emergency Medical Service

To the Editor of the "British Medical Journal"

SIR,—We should like strongly to commend to the favourable consideration of all officers working in it the changes in organization in the Emergency Medical Service as explained by the Minister of Health last week. The new conditions are the result of prolonged negotiations with the Ministry, and although inevitably they are in some points a compromise we believe them to be a substantial improvement upon the old. In particular it is to be hoped that the more favourable terms for part-time service will induce many whole-time officers to transfer to part-time and so make their skill and experience available to the general public instead of being to a large extent wasted as they are at present. Individual cases of hardship and inconvenience there are bound to be, but we are confident that these will be borne with the public spirit which has always characterized our profession.

May we take this opportunity of referring to another matter? There is a suspicion amongst some doctors that the Ministry of Health may be proposing to use the E.M.S. as the thin end of the wedge for a post-war State Medical Service. We can assure such, on the highest authority, that nothing is further from the Ministry's intention and that all such fears are groundless. It may well be, of course, that after the war economic conditions may make some form of assistance to the voluntary hospitals, by grants-in-aid or otherwise, necessary, but that the voluntary system will continue there is no reason to doubt.—We are, etc.,

ROBERT HUTCHISON.
HUGH LETT.
Nov. 27. W. FLETCHER SHAW.

To the Editor of the "British Medical Journal"

SIR,—The Minister of Health's scheme of reorganization for the Emergency Medical Service was announced by him in Parliament last week and published in detail in the medical press. In general he has accepted the proposals of the Central Medical War Committee as elaborated and negotiated by a special committee set up for the purpose. This special committee of the Central Medical War Committee, now known as the Advisory Emergency Hospital Medical Service Committee, includes not only members of the parent committee but representatives of the three Royal Colleges, including their Presidents, London and provincial Group Officers, and representative practitioners actually enrolled in the service.

It is, in the main, the profession's own scheme which the Minister has adopted. Its four cardinal points are:

(1) The creation of a definite establishment of whole-time, part-time, and sessional appointments.

(2) The creation of part-time appointments at £500 a year for practitioners of consultant and specialist rank.

(3) The substitution in a large number of hospitals of the payment per occupied-bed method of remunerating medical staffs for the sessional method hitherto in operation.

(4) The recognition of the Advisory Emergency Hospital Medical Service Committee of the Central Medical War Committee as the body to be consulted by the Ministry of Health on questions relating to the Emergency Hospital Service.

It is not always easy to adapt a large service to the rapidly changing conditions of war. I do, however, believe that the reorganization now being effected represents a substantial advance which is in the interest of the Government, the profession, and the community generally. As chairman of the Central Medical War Committee I commend the proposals to the profession.—I am, etc.,

H. S. SOUTTAR,
Chairman, Central Medical War Committee;
Chairman of Council, British Medical Association.
London, W.C.1, Nov. 28.

THE CAPITATION FEE IN WAR TIME

The following letter has been sent to the Ministry of Health by the Insurance Acts Committee of the British Medical Association:

Dear Sir,

It will be within the knowledge of the Ministry that insurance practitioners generally are dissatisfied with the annual capitation fee of nine shillings, which is paid for the medical treatment of each insured person. The Insurance Acts Committee has had the matter under the closest consideration, and at the outbreak of war had just completed a case in support of an upward revision of the fee. The immediate pressing claims of the war emergency arrangements have, for the moment, prevented the presentation to the Ministry of the Committee's case.

The Committee's views on the inadequacy of the present basic fee are unchanged, and its recent statistical and other investigations have confirmed these views. Without prejudice to this issue the Committee is investigating the rising cost of living and the increase in practice expenses due to war conditions in their relation to the present basic capitation fee with a view to an application for an adjustment of the fee to allow for these factors being laid before the Ministry at an early date.

Yours faithfully,
G. C. ANDERSON,
Nov. 28, 1939. *Secretary.*

INSURANCE ACTS COMMITTEE OF THE B.M.A.

MEETING OF WAR-TIME EXECUTIVE

Immediately after the outbreak of war an executive subcommittee of the Insurance Acts Committee was appointed to deal with all matters of urgency affecting the terms and conditions of service of insurance practitioners. A special meeting of this subcommittee was held at B.M.A. House on November 16 under the chairmanship of Dr. E. A. GREGG, when several matters of importance were discussed. The meeting had before it various circulars which have lately been issued by the Ministry of Health on emergency arrangements, war injury allowances, the suspension of the procedure for the issue of notices of cessation of title to medical benefit in the case of insured men called up for service, and the discontinuance of the quarterly issue of the drug tariff. A special point was made of the notification of the Ministry on September 1 to suspend until further notice proceedings in respect of failure to keep medical records. It was stated that some practitioners had interpreted this to mean that there was no longer any necessity to keep records—a very unfortunate assumption. The chairman said that that was not the meaning of the notice at all, and it would be wise to intimate to practitioners that record-keeping was just as important as ever in the war-time situation. Practitioners were, so to speak, put upon their honour in this matter.

National Service and Practitioners' Lists

Attention was drawn to the position of insured persons who have served with His Majesty's Forces or have temporarily removed from the area of the medical practitioner responsible for their treatment as insured persons. In a circular recently issued by the Ministry to insurance committees provision was made for insured persons called up under the Military Training Act, 1939, and it was felt that the principle should be extended to all insured persons engaged in national service, including those evacuated from their homes on account of the war. It was decided to urge the Ministry to restore the *status quo* in all cases.

Capitation Fee

The executive gave prolonged consideration to the question of the insurance capitation fee It had before it several resolutions from panel committees on the subject, and a memorandum presented by delegates from an open meeting of practitioners in a London area, which had urged that a war-time bonus on the present fee should be pressed for in order to meet the sharp rise in cost of living and in practice expenses. The Deputy Secretary detailed recent rises in the cost-of-living index. The executive was reminded that but for the outbreak of war the case for an increase in the basic capitation fee would already have been presented. It was felt that any application for an increase to meet temporary conditions must be without prejudice to the larger issue. The history of the capitation fee during and immediately after the last war was given. Before the war the fee stood at 7s. 3d. and remained at that figure until 1917; afterwards it rose to 8s., in 1919 to 8s. 9d., and in 1920 to 11s. after arbitration.

It was agreed, on the chairman's suggestion, to approach the Ministry, reminding them that but for the war the case for the upgrading of the capitation fee would now have been presented, and to say that without prejudice to the larger issue it was proposed to seek a temporary addition whereby the fee would be brought into relation with the rapidly growing increase in cost of living and in practice expenses.

General Practitioners and Air Raid Casualties

It was reported that the Ministry had decided to establish on a temporary basis a domiciliary medical service for all civilians who might sustain war injuries in this country and for whom in-patient hospital treatment was no longer necessary or was impracticable, treatment as out-patients being also impracticable. In this connexion the committee discussed a ruling of the Ministry that if, notwithstanding this provision of facilities for continued treatment, an insured person consulted his own doctor, any attendance and treatment required which was within the scope of general practitioners as a class would come within the practitioner's terms of service. It was decided to inform the Ministry that in the absence of experience of conditions following an air raid the committee did not accept the Minister's view that the treatment of an insured person for injuries directly attributable to such a raid was within the terms of service. It is not clear yet what the procedure is going to be with reference to the subsequent treatment of patients not seriously enough injured for detention in hospital who have been seen at first-aid posts.

Various Business

The National Pharmaceutical Union wrote asking as to the possibility of the rubber tubing of oxygen fittings being a source of infection. The committee could only reply that, of course, the possibility of infection existed in the absence of any steps to sterilize rubber tubing. The committee declined to approve various suggestions for fresh inclusions in the schedule of appliances forming part of medical benefit.

A request had previously been made to the Ministry for the inclusion of M & B 693 in the list of specially expensive drugs appended to Part II of the distribution scheme. The Ministry again stated that it was not prepared to vary its previous decision, and added: "We have on a few occasions refused sanction to special payment for an expensive proprietary drug for which we were satisfied there was a less expensive non-proprietary equivalent." The matter is one which affects only rural practitioners, and the committee decided to take it up yet once again with the Ministry, asking them to reconsider the decision from the point of view that it would be regrettable if rural practitioners were discouraged from using a drug which was considered to be of much value in treatment.

The committee had before it the letter from Dr. Douglas Robb which appeared in the *Supplement* of October 14 (p. 206) relating to those patients—chronics—to whom the doctor is permitted to issue certificates of incapacity once a month. In many such cases, the letter pointed out, the certificate is a pure formality and in peace time may not be a serious business, but during war, with the curtailment of transport for visits both by the patient to the surgery and by the doctor to the patient, it is a difficult matter. The letter suggested quarterly certificates in certain cases, and this was endorsed to some extent in a communication from a panel committee. The executive, however, did not agree with the proposal, for the reason that the period need not necessarily be the exact month, and the doctor can call on the patient at any time he happens to be passing.

Representations had been made to the Ministry on the question of pathological facilities for insured persons, but the Ministry has intimated that it does not regard the present time as a desirable one for opening up such a discussion, and it was agreed that this matter be left over for the present. It was decided to take up with a certain approved society a letter which the society had sent to a prospective member asking to be furnished with a medical certificate as to her present state of health, and adding: "As a general rule insurance medical practitioners are willing to perform a service of this kind for prospective panel patients without fee." It was considered that this remark was open to objection. A meeting of the executive of the National Defence Trust was also held.

The Secretary of State has withdrawn from Patrick Joseph Wallace, M.B., Ch.B.Irel., of Upton, near Pontefract, the authorities granted by the Regulations made under the Dangerous Drugs Act, 1920, to duly qualified medical practitioners to be in possession of and to supply any drug or preparation to which the Dangerous Drugs Regulations, 1937, or any drug to which the Raw Opium, etc., Regulations, 1937, apply. Any person who supplies Dr. Wallace with any of these drugs or preparations or supplies them on a prescription given by him will commit an offence against the Acts.

General Council of Medical Education and Registration

WINTER SESSION

The winter session of the General Medical Council was opened at the Council's offices, Hallam Street, W., on Tuesday, November 28. Sir NORMAN WALKER, the retiring President, was in the chair during the first part of the proceedings.

PRESIDENT'S ADDRESS

Sir NORMAN WALKER proceeded to deliver the following address from the chair:

At this, the 150th, session of the Council we find ourselves meeting once more with our country in a state of war. Of the thirty-five members present twenty-five years ago at the opening of the 100th session in November, 1914, at our late home at 399, Oxford Street, there are only four survivors: Sir Arthur Newsholme, Professor William Russell, and Dr. Kidd and myself, who are here to-day. Our terms of office as direct representatives, which were due to expire on January 1 next, may, I understand, be extended, in common with those of Mr. Bishop Harman and of Sir Henry Brackenbury, under an emergency Act recently passed to make provision for promoting economy and efficiency in the carrying on of our work under war conditions.

Sir Donald MacAlister, in his address to the Council on November 24, 1914, remarked that the occasion of the 100th session might in ordinary times have tempted the President to offer his reflections on the past history of the Council. He went on to say, "But these are not ordinary times. New history is in the making, day by day, for the British Empire and for the world. The Council is called upon to take an active part in meeting the national emergencies that have arisen, and will arise, in connexion with the civil and military medical services of the country." The same considerations to-day preclude the expenditure of time on recapitulation of a history which becomes constantly more interesting as it becomes longer; and I have only a few words to say about the immediate past.

The Late Chairman of the Dental Board

It is fitting that I should refer in this room and from this chair to the death of Sir Francis Dyke Acland, great-nephew of one of our most distinguished Presidents, and chairman of the Dental Board of the United Kingdom from its establishment in 1921 until May. His appointment to this position, which he filled with conspicuous ability and success, was the outcome of his work as chairman of the Departmental Committee of 1917–19 appointed to investigate the extent and gravity of the evils of dental practice by persons not qualified under the Act of 1878. On their recommendations the Bill which became the Act of 1921 and the constitution of the Board were founded. Sir Francis, who had been primarily responsible for the report of the committee, gave himself whole-heartedly to the work of the Board, as he did to everything he undertook. The public and the dental profession owe much to him, and he will leave an enduring memory here and elsewhere.

Members will wish me to offer on their behalf their most cordial congratulations to Mr. Sheridan, who has been our colleague as an additional member for dental business for ten years, and chairman of the Dental Education and Examination Committee for six, on his appointment as successor to Sir Francis. I am particularly glad to be assured that he will continue to remain with us as a colleague, for both he and Sir Francis have always been at one with me in realizing that medicine and dentistry are closely related, and that the more cordial the co-operation between the two bodies under this roof the better.

The Late Chairman of the Pharmacopoeia Commission

The British Pharmacopoeia Commission of the Council has recently suffered a very heavy loss by the death of the first chairman of the Commission, Dr. A. P. Beddard. A distinguished physician of Guy's Hospital, he revived in what might have been his years of leisure an early interest in pharmacology, and inspired and directed the work of the Commission, whose constitution was an interesting experiment, in preparing the *British Pharmacopoeia* of 1932 and the Addendum of 1936. He had the satisfaction of knowing that his unremitting labours had done much to assist the forwardness of the preparation of another issue of the *Pharmacopoeia,* which the Commission had designed to have ready for publication next year.

Members of the British Pharmacopoeia Selection Committee have been so good as to assemble at short notice in order to tender advice to the Council on the question of the succession to the chairmanship of the Commission, and their proposal, which will, I doubt not, be endorsed by the Pharmacopoeia Committee, will be laid before you at this session.

Changes in the Council

Since we met in May we have said farewell with great regret to Sir George Newman as our colleague. He had served on the Council for twenty years, and for seventeen years had been a treasurer and a member of the Executive Committee. His experience, gathered in a long career of brilliant work for the State, and the native wisdom of his advice were invaluable to the Council as a whole, to the occupants of the chair, and to other holders of office among us. For the last six years I have been happy in the knowledge that the deliberations of the Public Health Committee were guided and made fruitful by his complete grasp of the subject-matter of that great and growing sphere of medicine. Dr. Burn, the professor of pharmacology in the University of Oxford, whom I have just welcomed to the Council on his appointment as a Crown nominee in the place of Sir George, brings with him an expert knowledge which will specially assist us in relation to the *British Pharmacopoeia.*

Mr. Rilot and Mr. Woods, two of our additional members appointed by the Privy Council for dental business, were not re-elected by their constituents, and were therefore not eligible for reappointment as our colleagues after July. In their places the Privy Council have appointed an old friend, Professor Gilmour, who returns to us after an absence of fifteen years, and Mr. Cubie, whose long experience as a teacher of dentistry in Glasgow promises to be of value to the Council as well as to the Dental Board.

We all warmly congratulate Sir Robert Kelly on the knighthood conferred on him in the Birthday Honours List.

Medical Students and the War

We realize as a Council of Medical Education and Registration that the importance of maintaining due provision for study and proper requirements for qualification is enhanced rather than diminished in time of war. The numerous and difficult questions which are bound to arise in relation to the position of medical students are in the capable hands of the Licensing Bodies and of the Principals and Vice-Chancellors, who include three of our members, and arrangements have been made whereby the confusion caused twenty-five years ago by the rush of students at all stages of the curriculum to enlist will not recur. Those who have passed their examination in the preliminary sciences, and have had two terms of anatomy and physiology, are regarded as being in a reserved occupation and will continue their studies. We look with confidence to the medical schools and corporations to aid us to maintain, even in the present emergency, the standards of teaching and testing which we regard as essential to efficiency.

The problems which arose in the last war were not dissimilar, and it seems to me useful to quote from his address in November, 1914, Sir Donald's summary of the attitude of the Council:

"Communications were received from several professional authorities inquiring as to the propriety of modifying or suspending some of the existing regulations in the case of students whose regular course of study for a medical qualification might be interrupted by reason of military service. The Executive Committee thought it right to intimate, by means of a circular addressed to all the Licensing Bodies, the answer it gave in the name of the Council to the general question thus raised. In view of its importance to the public and the profession, I think it well to repeat here the words of the answer:

" ' With regard to the courses of study and examination prescribed for professional qualifications, it is the statutory duty of the General Medical Council to secure the maintenance of such a standard of efficiency as shall sufficiently guarantee the possession by candidates of the knowledge and skill requisite for the efficient practice of their profession.

" ' To this end the Council has formulated, for the guidance of the Licensing Bodies, a series of recommendations respecting such courses. These recommendations represent in general terms the *minimum* curriculum which, in the Council's opinion, should be required by the Licensing Bodies; and the Council notes with satisfaction that the Regulations of the several Bodies give effect to them.

" ' Cases may arise in which, during the present national emergency, the Bodies deem it expedient to modify or suspend the application of their regulations to particular candidates, but the Council expects that all such cases shall be duly recorded and reported to the Council in the usual way.

" ' The Council feels sure that in dealing with applications for modification or suspension of their regulations the Bodies concerned will recognize the importance, in the public interest, of maintaining unimpaired the present standard of knowledge and skill required of all who seek to be admitted to the status and privileges of registered practitioners; and will accordingly agree with the Council that it is desirable to secure, in every instance, that the requirements of the *minimum* curriculum are substantially fulfilled.' "

The Position in Australia

In my last two addresses I found it necessary to refer to certain difficulties and misunderstandings which had arisen in two of the States of the Australian Commonwealth regarding the interpretation of certain sections of Part II of the Medical Act of 1886. The outbreak of war makes it inexpedient to continue their discussion now.

We have all noted that in order to supplement the existing arrangements for collaboration between the Governments of the British Commonwealth His Majesty's Government have invited the Governments in the Dominions to send a Cabinet Minister to London to confer with Ministers here and with each other. I have long felt that a similar conference between representatives of the Medical Boards or Councils within those Dominions with which we were linked up through the application of Part II of the Act of 1886 and representatives of this Council would materially help to clear up misunderstandings which undoubtedly exist. But in the meanwhile I suggest that we should all put these difficulties into cold storage. We have never had any doubt as to the adequacy of the degrees conferred by such universities as Sydney and Melbourne, and for various periods extending over nearly half a century their graduates who desired it have been placed without question on our *Register* and endowed with all the privileges that registration carries. In return we hope that the States of Victoria and New South Wales will take the necessary steps to stay their administrative hands, and will accept the invitation to attend, when the emergency is over, the conference I have proposed. I have indeed written a personal letter to the President of the New South Wales Medical Board making this suggestion, and the letter was approved by the Executive Committee yesterday.

The Chairman of Business and I refrain on this occasion from offering you the usual forecast of the length of the session. Prophecy is not made more easy by the circumstances of the time: and we already have the certainty that by your exertions the business which awaits you will be discharged without haste and, as you will see from the programme, with even less rest than you normally enjoy.

The first item in that business will be for me to resign from the chair and for the Council, on the occurrence of a vacancy in the office of President, to elect one of their number in my place. Last Friday it was eight years since the Council were pleased to confer upon me the highest honour which is in their power to give; and three years since they were pleased to re-elect me for the period terminating at the end of the session. These eight years have been made very happy by the willing co-operation of members, past and present, and I pass from the chair with heartfelt gratitude to them all.

ELECTION OF NEW PRESIDENT

After the conclusion of Sir Norman Walker's valedictory address the General Medical Council elected as his successor in the Presidential chair Mr. Herbert Lightfoot Eason, C.B., C.M.G., M.D., M.S., F.R.C.S., who has been Principal of the University of London since 1937 and was formerly superintendent and senior ophthalmic surgeon at Guy's Hospital.

On taking the chair Mr. EASON thanked the Council for the great honour conferred on him. As a mere Englishman he hoped to be able to emulate the example of his three distinguished Scottish predecessors. In moving the Council's thanks to the retiring President, he said it was doubtful whether any member of the Council had served it with more devotion and less self-interest. He had been a member of the Council for thirty-two years; for twenty-seven years he was a member of the Executive Committee, a similar period on the Penal Cases Committee, twenty-five years on the Examination Committee, and very many years on the Business Committee. He was on the Pharmacopoeia Committee for twenty-three years, and a valued member of the committees dealing with students' registration, prevention of unqualified practice, and national health insurance. He had used his wisdom and judgment unsparingly for the benefit of the Council and the public, and without his assistance it might have made many false steps. It was with extreme regret but also with gratitude and admiration that they bade farewell to him as President.

Professor GAMGEE, seconding, said that Sir Norman Walker succeeded a great President who had been in office for years. But he had unequalled knowledge of the business of the Council and of medical examination in this country, India, and the Colonies, and he had been a worthy successor to his great predecessor.

Sir NORMAN WALKER made a brief acknowledgment, saying he had felt it a great honour to succeed Sir Donald MacAlister.

Dr. John W. Bone, treasurer of the British Medical Association, and Dr. H. Letheby Tidy were elected treasurers of the Council on a proposition from the chair, and Sir Kaye Le Fleming was, on a ballot, elected a member of the Penal Cases Committee.

MEDICAL STAFFING OF FIRST-AID POSTS

In the War Notices in the *Supplement* of November 25 (p. 227) we published the Minister of Health's reply to representations made by the British Medical Association on the medical staffing of first-aid posts. A circular which has now been issued by the Ministry to local authorities on the new arrangements states that in the more vulnerable areas a medical officer should be in complete charge of each first-aid post (including mobile units) instead of being only responsible for the training of the personnel. At present the medical officer of health is directly responsible for all the posts in his area, but it is desirable that there should be a definite link in the chain of command between him and the first-aid posts as they are now functioning.

Local authorities are asked to arrange for the medical officer at present supervising collective training at each post, or, if he is unwilling, another practitioner selected for the purpose, to undertake complete charge of the post, subject, of course, to the general directions of the medical officer of health. He would supervise not only the volunteer personnel but also the trained nurse and any members of the local authority's staff employed at the post, and he would continue to conduct the collective training of the personnel. He would also undertake the responsibility for stores and the general maintenance of the post and any correspondence on administrative matters relating to the post, so that he would, in effect, be acting as a temporary officer of the local authority. He would be expected to visit the post at least three times a week, timing his visits in such a way as to enable him to keep in touch with staff on different shifts, and to be prepared to attend during an actual air raid if required. One or more other doctors might also be retained to attend during a raid, but they would have no responsibility for the general supervision of the post.

Local authorities are authorized to pay a salary at the rate of £75 per year for each aid post in consideration of the performance of these duties, the employment being for six months in the first instance subject to a month's notice on either side. In addition, in the event of the doctor being required to attend the post owing to an actual air raid upon the locality, sessional fees would be payable at the rates announced in Circular 1869—namely, one and a half guineas for a session of not more than two hours and three guineas for a session of longer duration, subject to a total payment of not more than three guineas in respect of any one day. Further, as it is understood that on the outbreak of war medical officers were in some instances required by medical officers of health to attend their posts on a sessional basis notwithstanding the non-occurrence of raids, the payment to them of sessional fees is authorized in cases where sessional attendances were required and given before the receipt of Circular 1869. These financial arrangements are in substitution for the payment of twenty guineas already in operation, the necessary adjustment being made with the medical officers as at the date from which the change of duties comes into operation. In any case where duties on the new basis have already been performed the adjustment may be made as at the date when they started, provided that this date is later than the period for which any sessional fees are paid. In the case of first-aid posts at hospitals some modifications of the arrangements for securing responsible control of the post may be needed to suit the circumstances, provided that the cost is not increased.

Finally, local authorities are asked to inform the Minister not later than December 31, 1939, what steps have been taken to give effect to these proposals.

In the less vulnerable areas, to which this circular does not apply, the authority to pay a fee of twenty guineas per annum to one doctor at each post in respect of collective training of personnel continues in force.

Correspondence

Public Medical Services and Evacuated Persons

SIR,—In common with many other services the London Public Medical Service has had to face the problem of the large number of subscribers who are evacuees, either voluntary or under the Government scheme. The unaccompanied children are, of course, lost as subscribers "for the duration," or until their parents bring them back. But in London we have an appreciable number of subscribers who have gone away on their own account, and who, having become accustomed to insurance against the risk of a doctor's bill, are anxious to retain this advantage. The London Public Medical Service has, up to the present, told these subscribers that if, while away but still keeping up their subscriptions, they incur a doctor's bill we will pay or help to pay these bills. A considerable number of such claims have been paid, the extent of the grants being based on the National Deposit Friendly Society scale and also on length of membership. Such a plan, while convenient for a short time, is not suited for a prolonged period.

From January 1, 1940, therefore, we propose to adopt the following plan. Each subscriber who has left or proposes to leave London on account of the war and keeps up the necessary payments will be given a card to be presented to a local doctor of the subscriber's own choice. We ask such doctors to accept these subscribers for a quarterly payment of 3s. 3d. per person, which will be guaranteed and paid by us in full even if the subscriber shall cease payment during the quarter. The subscribers will be urged to select a doctor immediately on arrival and not to wait until they are ill.

This capitation fee is to cover an ordinary general practitioner service with the usual medicines. It is better than national health insurance financially, apart from there being no record-keeping or other regulations. The success of the scheme depends on the co-operation of doctors in the reception areas. It should appeal to them because Public Medical Service subscribers belong to a class which finds it difficult to meet bills. A guaranteed net payment of 13s. a year with no record-keeping or other clerical obligations is a distinctly better proposition than the chance of recovering a bill from total strangers, or the unpleasant alternative of trying to get cash payments from people who are often in very straitened circumstances.

I shall be glad to answer inquiries from other services as to our administrative procedure.—I am, etc.,

Tavistock House (South),
Tavistock Square, W.C.1,
Nov. 23.

ALFRED COX,
Secretary, Public Medical Service
for London.

Indemnity for Doctors practising Over-seas

SIR,—The London and Counties Medical Protection Society has for some years received many requests from practitioners resident over-seas that some form of indemnity should be available to them while practising outside the British Isles. Although membership of the society has at all times been open to these practitioners, the benefits accruing to them have been somewhat minimized because hitherto the society did not undertake cases for trial in colonial or foreign courts.

The council has from time to time explored the position carefully, and is now able to announce that it has succeeded in arranging, by agreement with Lloyds Underwriters, for an indemnity against actions over-seas. This indemnity will be available to members of the society on payment of an additional subscription of £2 per annum, and will be for a maximum of £1,000 in any one case or £2,000 in any one year.

Under the new scheme the society has made arrangements with Lloyds for cases to be dealt with locally after receipt of the member's application and consideration thereof by the council. Arrangements have also been made for dealing expeditiously with matters of an urgent nature.

Full details of the scheme will be sent on request to any practitioner who may be interested.—I am, etc.,

GEORGE F. STEBBING,
Chairman of Council, London and Counties
Medical Protection Society.

Nov. 22.

Car Labels

SIR,—I imagine that "M.B.," whose letter appears in the *Supplement* for November 18, is an urban practitioner, and I agree with every word he writes—for urban practitioners. But let us consider the case of the country G.P. who usually drives about fifteen hundred miles a month. He has no desire to advertise, but one car of a popular make is very like another, and the "Doctor" label on his car identifies it in the villages and he is saved a number of unnecessary return visits, much time, much very unpleasant driving after the black-out, and many gallons of petrol. This is why I personally keep these labels on both my cars.—I am, etc.,

St. Neots, Hunts, Nov. 22.
H. C. CRAVEN VEITCH.

Medical Students and Military Service

SIR,—Medical students must have passed the first professional examination and have completed two terms in anatomy and physiology to be "reserved" under the Military Service Act, while theological students, including beginners, are all "reserved." Nobody wishes to claim priority for medical students, but surely they should have equal rights with theological students.

As a past chairman of a large division of the B.M.A. and vice-chairman of the Local Emergency Committee I feel this is a matter which the B.M.A. should try and rectify, as it concerns the sons of many of their members who have given them a liberal and costly education in the hope that they will eventually succeed to their fathers' practices. I would suggest that a medical student who has passed his first professional examination should at least be "reserved." In a very short time these students will be qualified to act as dressers or surgeon probationers as in the last war. If the war should last long enough they will be fully qualified, whereas as things now are they may never have the opportunity to carry on their studies.

I have discussed this matter with many members of the profession, including teaching staffs of hospitals, and all of them are of the same opinion, but so far no one apparently has made the suggestion openly.—I am, etc.,

Nov. 20. ALPHA.

Naval, Military, and Air Force Appointments

ROYAL NAVAL VOLUNTEER RESERVE

Probationary Surgeon Lieutenants to be Surgeon Lieutenants with seniorities as indicated in parentheses: F. J. Curtis (August 5, 1938); D. C Brodie (October 5, 1938); H. Stirling (October 7, 1938); P. A. T. Phibbs (October 19, 1938); J. F. Foulkes (October 3, 1938); J. A. Chivers (October 18, 1938); J. R. H. Peat (April 20, 1938).

ROYAL ARMY MEDICAL CORPS

The precedence of Captain W. G. Macfie is next below Captain J. B. Dancer and not as stated in the *London Gazette* of October 17, 1939.

The following short-service officers have been appointed to permanent commissions, retaining their present seniority: Captains K. H. Clark, J. A. D. Johnston, M.C., W. M. Oxley, W. G Greene, R. H. Hunt, A. J A Gray, G. M. Denning, J. O'Connell, and H H Atkinson

The probationary commission of Lieutenant W. U. Hill has terminated

ROYAL AIR FORCE RESERVE. MEDICAL BRANCH

Flying Officers A. R. Sibbald and E. A. Mayston to be Flight Lieutenants

AUXILIARY AIR FORCE: MEDICAL BRANCH

Flying Officers E. C Gross, A. C. Hendry, M.C., and R. S Cromie to be Flight Lieutenants.

ROYAL AIR FORCE VOLUNTEER RESERVE: MEDICAL BRANCH

Flying Officers T. Crowley, B. Haring, C. H. Levick, C. F. H. Sergeant, G. F Rees-Jones, and R. F. Stubbs to be Flight Lieutenants.

Flying Officer B. M. Merriman has relinquished his commission on account of ill-health

REGULAR ARMY RESERVE OF OFFICERS

ROYAL ARMY MEDICAL CORPS

Major F. A. Robinson, M.C., has ceased to belong to the Reserve of Officers on account of ill-health

Captain A. J. Horne has ceased to belong to the Reserve of Officers on account of ill-health.

Lieutenant A. H. W. Fleming, from Reserve of Officers, Royal Norfolk Regiment, to be Lieutenant, with seniority July 31, 1925. (Substituted for the notification in the *London Gazette* of October 24.)

TERRITORIAL ARMY

ROYAL ARMY MEDICAL CORPS

Lieutenant-Colonel D. W. Boswell, T.D., has relinquished his commission on ceasing to be employed

Captain C. B. Macleod to be Major.

Captain E. D. Fitzpatrick has relinquished his commission on account of ill-health.

Captain A D. Forgie has resigned his commission

Captain R. Cunningham, from Territorial Army Reserve of Officers, R.A M.C., to be Captain.

Lieutenant C. W. Gordon to be Captain, with seniority July 8, 1938.

Lieutenant E. F Baines, from Territorial Army Reserve of Officers, R A.M C., to be Lieutenant.

Lieutenant H. W. Wykes, from Territorial Army Reserve of Officers, Royal Artillery, to be Lieutenant

Lieutenant I. M. Davidson has relinquished his commission on account of ill-health.

Second Lieutenant A. Cierar, from Royal Artillery, Territorial Army, to be Captain, with seniority February 10, 1938.

O. J. Morgan to be Lieutenant.

TERRITORIAL ARMY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS

Major J. R. Menzies has relinquished his commission on account of ill-health.

Captain G S. Lewis has relinquished his commission on account of ill-health.

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

Lieutenant T B Bailey has relinquished his commission on account of ill-health.

To be Lieutenants: H. G. John, A. V. J Russell, S. B. Greenberg, J S. Banks, H. W. Cowan, A. E. Cooper, J. Gendle, H M. R. Knight, A. D McGill, J. C. Reid, G. F. Boyle, J. A. Barrie, J Hendry, D. S. Crawford, D W. Forgan, J. Hesketh-Beasley, H. A. Vickers, G. R. Royston, J. D. Gordon, L. F. McWilliams, W. S. Terry, J. S Maxwell, D. C. Williams, F G. Macdonald, Q. F. Evans, R. M. Scott, A. S Beer, D. D. S Stewart, E. B. Brennan, P. J. McManus, J. S Marr, J. H O. Chance, T. Duffy, C Nairnsey, B. T. Jones, A W. O. Taylor, H. M. Brown, K. McD. Ross, W. J. Walter, H. R. Kellas, A. C. D. Parsons, D C. Tomlins, D. S. P. Wilson, J. M. Bassett, R. D Rowlands, C. J. Wells, I. H. Baum, N. A. Scott, R. M. B. MacKenna, R. W Eason, W. H. de B. Hubert, C. E. H. Maycroft, T. E. Tierney, F. H C. Watson, R. W. Farquhar, R.-F.-K. Webster, L. B Wevill, H. R. Davies, J. J. Elphinstone, D. F. Laing, R. S. MacHardy, I. Thomas, R. A. Brown, P G. McGrath, W. D. Moore, P. W. H. Bleasdale, J. S. Kinnear, T. A. S. Brown, V. W. J. Hetreed, J. H Moir, R. J. D. Temple, J. C. Morris, J. A M. Paton, G. W. Robinson, J. D. Watson, H. W. Allen, J. M. Jackson, C. C. S Pike, E. Townsend, G. M. Cooper, C. M. Wells, A. J. May, R M. Shaw, D. Levine, A. B. Wilkes, R. E. Isaac, A. Mackler, J. I. Heany, J. B. Hurll, M. J. Lahiff, P. W. M Martin, J A. Robson, J. L D. Williams, L. J. J. O'Donnell, F. O'Driscoll, I. S. Schalit, M W. Smith, T. H. W. Clarke, S B. Hughes, J. McCurdy, R. B. G. Robertson, G. C. Haslam, D. L. Stewart, P. S Adler, E. S. A. Ashe, A Burns, W A. Dunnet, J. R. Heming, I. Jacobson, E J. Ryan-McMahon, A Macnab, F. A Evans, H L. Ellis, J. N. T. Hulton, J. E. Wooding, L. C. Allan.

Postgraduate News

The Fellowship of Medicine announces a course of instruction for F.R.C.S. (Final) candidates, to be given as follows: surgical tutorial classes, twice or three times weekly at 4.30 p.m., from December 12, 1939, to January 25, 1940. The lectures will be given at the lecture room of the Medical Society of London. A comprehensive course, including clinical instruction, in the wards and out-patient department, lectures, *x* rays and museum demonstrations, and tutorial classes (including answering set questions). The course will be given from December 11, 1939, to January 27, 1940, from 9.30 a.m. to 1 p.m. Mondays to Fridays, and 11 a.m. to 1 p.m. on Saturdays. Short courses in pathology will also be given, each consisting of two demonstrations (in the same week) from 2 p.m. to 3.30 p.m., and limited to six postgraduates. The course will be repeated (for fresh classes of six postgraduates) if there is sufficient demand. No postgraduate may attend more than one course.

The committee of the South-West London Post Graduate Association has decided that owing to the war no meetings should be held until further notice. The position will be reviewed in March, 1940. It is understood that members of the association will be welcomed as visitors at the meeting of the South-West London Medical Society held at Bolingbroke Hospital on the second Wednesday in the month at 3.30 p.m.

WEEKLY POSTGRADUATE DIARY

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street. W.—*Brompton Hospital, S.W.*: Mon. and Wed., 4.30 p.m., M.R.C.P. Course in Chest Diseases.

MANCHESTER ROYAL INFIRMARY.—First of course of six lecture-demonstrations on first-aid treatment of air raid casualties. *Tues*, 3 30 p.m., Prof. H. Platt, Fractures of Limb Bones and Injuries to Joints, Simple and Compound. *Fri*, Mr. W. R. Douglas, (*a*) Shock and Resuscitation of Shocked Patient; (*b*) General First-aid Treatment of Wounds, Burns, etc.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

General Meeting of Fellows—Tues., 2 p m. Ballot for election to the Fellowship.

Section of Orthopaedics—Tues., 2.30 p.m. Short papers by Mr. C. Lambrinudi: A Further Use of Kirschner Wires. Mr H. Jackson Burrows: Treatment of Ununited Fractures by Bone-grafting without Resection of the Bone Ends. Miss M. Forrester-Brown: Simplification of Technique in some Joint Operations.

Section of History of Medicine.—Wed., 2 30 p.m. Paper by Dr. George Edwards: Philip Syng Physick (1768–1837)

Section of Neurology.—Thurs., 2 p m. Paper by Dr. J. W. D. Bull: Subdural Haematomas.

BIOCHEMICAL SOCIETY, Courtauld Institute of Biochemistry, Middlesex Hospital, W.—Saturday, December 9, 11.45 a.m. Communications and demonstrations.

ROYAL INSTITUTION, 21, Albemarle Street, W.—*Tues.*, 2 30 p.m., Sir Frederick Keeble, F.R.S., Food Production in War Time.

VACANCIES

EXAMINING FACTORY SURGEON.—The appointment at Newport (Monmouthshire) is vacant. Applications to the Chief Inspector of Factories, Home Office, Whitehall, S.W.1, by December 11.

APPOINTMENTS

JONES, David J., B.Sc., M.B., D.P.H. (Medical Officer of Health, North Breconshire Combined Districts), Assistant County Medical Officer of Health for Northamptonshire, and District Medical Officer for Brackley Borough, Brackley Rural District, and Brixworth Rural District.

OWEN, L. C. P., M.R.C S., L.R.C.P., Resident Assistant Medical Officer, Brighton Municipal Hospital, Brighton.

ROCHE, Alex. E., M Ch., F.R.C.S., Genito-urinary Surgeon, West London Hospital, Hammersmith Road, W.

EXAMINING FACTORY SURGEONS.—J. A. R. Cant, M.B., Ch.B., for the Coleshill District (Warwickshire); Dominic Ciantar, L.R.C.P. and S., L.R.F.P.S., for the Abercrave District (Breconshire).

B.M.A.: Branch and Division Meetings to be Held

METROPOLITAN COUNTIES BRANCH: CITY DIVISION.—At B.M.A. House, Tavistock Square, W.C., Tuesday, December 5, 2.45 p.m. Dr. J. Trueta: "The Medical and Surgical Assistance of Minor Injuries in Bombarded Towns."

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this heading is 9s This amount should be forwarded with the notice, authenticated by the name and address of the sender, and should reach the Advertisement Manager not later than the first post Tuesday morning to ensure insertion in the current issue.

MARRIAGE

MCKENNA—MCMAHON.—On November 10, 1939, at St. Gertrude's Church, South Croydon, D J McKenna, Larne, Co Antrim, to Aileen McMahon, M R.C.S., L.R C P., D.P H., 10, Normanton Road, South Croydon.

SUPPLEMENT TO THE

BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 9 1939

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WAR NOTICES

The Emergency Medical Service

The following letter has been sent by the Ministry of Health to all voluntary hospitals in the Emergency Hospital Scheme. It is of particular interest to the staffs of those voluntary hospitals in the Emergency Medical Service to which no whole-time member of the service undertaking clinical work (other than a house officer) is attached—that is, to the staffs of the majority of provincial hospitals.

"1. I am directed by the Minister of Health to inform you that he has agreed with the Advisory Emergency Medical Service Committee set up by the Central Medical War Committee to make certain changes in the method of payment for medical services at voluntary hospitals within the Emergency Hospital Scheme where medical attendance on casualties has hitherto been provided for on a sessional basis and by the payment of sessional fees.

2. At voluntary hospitals to which are attached whole-time members of the Emergency Medical Service undertaking clinical work (other than house officers) or members of the service receiving a part-time salary or retaining fee the sessional arrangements will continue in operation.

3. To all other voluntary hospitals within the Emergency Hospital Scheme the Minister will make payments at the rate of 1s. 6d. per night per bed occupied by a casualty and of 6d. per casualty out-patient attendance, by way of an addition to the fortnightly interim payments being made to the hospitals under existing arrangements. These sums will be paid on condition that they are devoted to the payment of the medical staff employed on the casualty work in such manner as the medical staff may desire. The memorandum accompanying the fortnightly payment will specify separately the amount paid for medical services and will show how it has been calculated. It will be appreciated that the payment for a given fortnight is based on the last return due before the commencement of that fortnight.

4. If and when the arrangements for medical staffing at a hospital are changed the corresponding change will be made in the method of payment for medical services. In no case will the methods of payment for these services by sessions and by occupied beds be in operation at the same hospital for the same period.

5. The term 'casualty' in this circular includes any of the types of cases for which the Government accepts financial responsibility as if they were casualties, as indicated in the fortnightly returns rendered by hospitals to the Ministry. These returns, subject to the necessary scrutiny, will be used for the purpose of calculating the amounts payable for medical services.

6. In the case of a voluntary hospital (not covered by paragraph 2), where medical services have already been rendered for these types of cases and no payments have yet been made, it is proposed to make the new method of payment retrospective. Subject to this the change will take effect as from December 1."

Unaccompanied Children Schemes

The time is approaching when practitioners in reception areas will be expected, under the arrangements made by their Local Emergency Committees, to make certain returns in order to secure that appropriate payment is made to them. Such practitioners are asked to study the arrangements made by their Local Emergency Committees and to make the necessary returns at the prescribed time. Any practitioner in a reception area who is unaware of the detailed arrangements should communicate with the secretary of the Local Emergency Committee.

Reorganized Emergency Hospital Service

The description of the reorganized Emergency Hospital Medical Service published in the War Notices in the *Supplement* of November 25 (p. 227) contained a statement that "the position will be reviewed in the light of experience for the period ended June 30, 1940." This statement related only to the daily rate of payment per occupied bed of 1s. 6d. a day and to the rate of payment of 6d. per out-patient attendance applicable to those hospitals in which no Class I officers (other than administrative or house officers), or Class II officers, or Class III officers are employed. It should not be read, as it has by some, as meaning that the terms of service generally will be reviewed for the period ended June 30, 1940.

CENTRAL EMERGENCY COMMITTEE
(Central Medical War Committee),
British Medical Association House,
Tavistock Square, W.C.1.

INSURANCE PRACTITIONERS AND AIR RAID CASUALTIES

The following communication, in which it is urged that treatment of air raid injuries should be regarded as outside the scope of medical benefit under national health insurance, has been forwarded by the British Medical Association to the Ministry of Health:

"In a letter dated July 10, 1939, the Ministry stated that it was the intention of the Government to provide persons injured in air raids with treatment at the public expense at first-aid posts and at hospitals.

It is understood to be the view of the Ministry that if an injured insured person decides not to avail himself of these facilities and consults his insurance doctor any attendance and treatment required which is within the competence of the insurance practitioner would come within the practitioner's terms and conditions of service under national health insurance. Under the arrangements for the continued medical care by their general practitioners of civilians who sustain war injuries and whom it is no longer necessary or practicable to treat as an in-patient, or whom it is not practicable to treat as an out-patient, the insured persons falling within this group are held by the Ministry to be entitled to medical care under national health insurance Thirdly, in a communication dated October 21, 1939, relating to the areas not covered by first-aid posts, mobile or fixed, the Ministry ruled that only in the case of uninsured persons would the Ministry consider remunerating practitioners for the work done in treating air raid casualties.

In general the Insurance Acts Committee does not accept the Ministry's view that persons injured in air raids and requiring general practitioner treatment either early or late in respect of the injuries they sustain are entitled to receive such treatment at the hands of their insurance practitioners within the normal national health insurance arrangements. There are a number of considerations which lead it to take this view:

(1) When the existing capitation fee was decided upon it was not contemplated that such unusual services would be required, and no financial recognition of them was taken into account in assessing the capitation fee.

(2) For other purposes within the scope of national health insurance, notably for purposes of cash benefits, insured persons

injured in air raids are *not* regarded as covered by the peace-time national health insurance arrangements

(3) It has been agreed by the Ministry that first-aid treatment rendered in road accidents to insured persons does not fall within the scope of medical benefit. Thus, on the basis of the existing decisions if an insured person is injured in a road accident his treatment is outside the scope, but if he is injured as a result of an air raid his treatment is within the scope.

(4) The Government has deemed it necessary to provide, at the public expense, special services for this range of medical work. It is illogical that at the same time it should rule that where an insured person does not desire to use these services or, as may well happen. these services are inadequate for the purpose, or, in certain rural areas, non-existent, the Government should shift the responsibility on to insurance practitioners.

(5) The following is an extract from the report of the official *British Medical Journal* reporter of the meeting of representatives of Local Emergency Committees addressed by the Minister of Health on February 15, 1939:

> 'In reply to a question as to whether he could give an assurance that attendance on air raid casualties would not form part of medical benefit under the present terms of service for insurance practitioners, he [the Minister] replied, "I think I can give that assurance. I am sure that will fall outside national health insurance."'

In the view of the Insurance Acts Committee the only consistent and equitable policy to adopt would be to regard air raid injuries, like those received in road accidents, as outside the scope of national health insurance. The Ministry has admitted the principle by providing facilities for the population, insured and uninsured, at the public expense, and by making non-insurance provision for cash payments. To recognize that insured persons who so choose are free to obtain an alternative service at the expense not of themselves but of the time and labour of insurance practitioners, who are in receipt of a capitation fee not including provision for this unusual work, is unfair to insurance practitioners. It is unlikely to encourage either the proper use of the facilities provided at the public expense or, where this is necessary, any augmentation required to make them reasonably complete.

What is urged is that the Ministry should exclude treatment of air raid injuries from the scope of national health insurance, requiring insured persons and others in areas where sufficient facilities do exist either to avail themselves of the national facilities or to obtain medical service at their own expense; in areas where facilities do not exist the official arrangements should permit insured persons and others to obtain the service they need through the only local channel available, the medical profession of the area, in this case at the public expense."

GENERAL MEDICAL COUNCIL

WINTER SESSION

The unusual procedure was followed at the meeting of the General Medical Council on November 29 of taking all the committee reports *in camera*. These included reports from the Examination, Public Health, and Pharmacopoeia Committees. The last-named report was afterwards issued to the Press, and an abstract appears below.

Professor J. H. Burn was appointed to the Examination Committee in place of Mr. H. L. Eason, the new President, and to the Public Health Committee in place of Sir George Newman, retired.

Messrs. Waterhouse and Co. were reappointed solicitors to the Council.

The British Pharmacopoeia

Dr. David Campbell, chairman of the Pharmacopoeia Committee, reported to the Council that the work of revising the *British Pharmacopoeia* was so far advanced that but for the war the next publication would have been in 1941. The date of publication must now be modified. Costs of printing and paper make it undesirable to publish the book in war time, and, moreover, many objections could be raised to the publication of a set of new standards at a time when trade conditions are disturbed and supplies are difficult.

During the last war numerous problems relating to drugs and their pharmacopoeial standards arose, and in some instances it became necessary to deal with the problems by modifying the *British Pharmacopoeia*. This time, fortunately, the Council has the expert advice of the Pharmacopoeia Commission on any problems of this kind which may arise. Contact has been made between the Commission and the Ministries of Health and of Food. The Medical Research Council has formed a Therapeutic Advisory Subcommittee to advise the Ministry of Health and the medical and pharmaceutical professions on the relative therapeutic importance of drugs and on economy in their use. The secretary of the Commission, Dr. C. H. Hampshire, has been appointed secretary of this subcommittee.

The Commission is already in co-operation with the Association of British Chemical Manufacturers. A subject which is being actively taken up is the official naming of British substitutes for foreign proprietaries and the inclusion of the names in the *British Pharmacopoeia*. Monographs on British equivalents are in preparation, and should the need arise the Commission proposes to ask the Council at a later stage to sanction an issue of an addendum to the *British Pharmacopoeia* containing these monographs.

The appointment of Professor J. A. Gunn as chairman of the British Pharmacopoeia Commission in the place of the late Dr. A. P. Beddard was made on the recommendation of a Selection Committee. Professor Gunn, who has been a member of the Commission ever since its formation, is professor of therapeutics (formerly professor of pharmacology) in the University of Oxford and director of the Nuffield Institute for Medical Research.

Restorations

It was announced that the Council had restored the following names to the *Medical Register*: Patrick Joseph O'Shaughnessy, Douglas Chetham Pim, Frederick Arthur Pring, and David West.

The following were restored to the *Dentists Register*: Hubert Lancelot Terry Bramley, John Herdman Faulding, Michael Henry Harte, and James Sharples Hopwood.

DISCIPLINARY INQUIRIES

Cases Postponed from Previous Sessions

The Council further considered the case of Ewen Lovat Fraser, registered as of Armley Road, Leeds, against whom two convictions, one in 1934 for being in charge of a motor car whilst under the influence of drink, and the other in 1939 of driving or attempting to drive a car whilst under the influence of drink, had been proved at the May session. Mr. Oswald Hempson, for Dr. Fraser, brought forward excellent testimonials from some professional colleagues and others to Dr. Fraser's character, and said that he deeply regretted his fault. The Council decided not to instruct the Registrar to erase the name.

The case of Arthur Appleton Woods, registered as of Charles Street, Hanley, against whom two convictions, in 1938, of being in charge of a motor car whilst under the influence of drink had been found proved at the previous November session, came up for judgment. Testimonials in Dr. Woods's favour were read from three medical colleagues and a clergyman. In this case also the Council did not see fit to erase the name.

The next adjourned case was that of John McGhee, registered as of Station Road, Galston, Ayrshire, against whom at the last November session it had been proved that he had been convicted in 1938 of driving a motor car whilst under the influence of drink. Testimonials in Dr. McGhee's favour were read from two medical men, and Dr. McGhee told the Council that, having promised on the last occasion to practise total abstinence, he had faithfully fulfilled his promise and intended to continue to do so. The Council decided not to erase the name.

A different course was taken with the remaining adjourned case, that of William Aloysius Kennedy, registered as of Gower Street, Glasgow, against whom it had been proved at the November, 1937, session that on three occasions in 1937 he had been convicted, once of being drunk and disorderly, and twice of being in charge of a motor car whilst under the influence of drink. Judgment was postponed in the first instance for one year, and on Dr. Kennedy's reappearance in November, 1938, he was told by the Council that it was not satisfied with the testimonials he had produced, and judgment was further postponed for six months. At the May, 1939, session Dr. Kennedy did not appear, and the Council again adjourned the case for six months, and desired to intimate to

Dr. Kennedy its strong advice that he should be present on the next occasion. Dr. Kennedy now appeared in answer to his notice. The Council's solicitor read various testimonials which had been received from doctors to whom Dr. Kennedy had acted as locumtenant and from a shipping company, in whose employment he had been as a ship surgeon. Asked whether he had anything to say to the Council, Dr. Kennedy replied that he had not, and after consideration *in camera* the Council directed the Registrar to erase the name of William Aloysius Kennedy from the *Register*.

Misdemeanours : New Cases

The Council considered the case of Robert Campbell Crawfurd, registered as of Brundholme House, Keswick, who was charged with having been convicted at the Sheriff Court of Edinburgh, in March, 1937, of driving a motor car without due care and of driving the same car whilst under the influence of drink to such an extent as to be incapable of exercising proper control, and in September, 1939, of a similar offence, on which latter occasion he was fined £40 or three months' imprisonment. The Council's solicitor said that after the first conviction, in 1937, a warning was addressed to Dr. Crawfurd from the Registrar, to which he replied expressing regret for a temporary lapse. On the second occasion, in 1939, two special constables saw him on the footway, and, forming the opinion that he was drunk, took him to the police station. He was not driving the car.

Dr. Crawfurd said that he served for four years in the R.A.M.C. during the last war, and was sent home with malaria and dysentery. After demobilization he joined his father in practice at Keswick, but in February of this year he had to give up practice entirely owing to poor health, and he went to live with his father, who had in the meantime retired, at Edinburgh. His father and mother both died within a short time, and these events affected him considerably, and it was his depression consequent upon bereavement which accounted for the incident giving rise to the second conviction. On neither of these occasions was any harm done to any member of the public, and both were in Edinburgh, where he had never practised. He promised to abstain from alcohol in future.

Mr. A. Pereira, on behalf of Dr. Crawfurd, put in testimonials by two medical men who wrote as to Dr. Crawfurd's integrity during his practice in Keswick.

After deliberation, the Council did not see fit to erase Dr. Crawfurd's name, and closed the case.

The case next considered was that of Joseph Marshall McCaldin Wright, registered as of The Lodge, Southborne Road, Bournemouth, who appeared on the charge that he had been convicted, in March, 1939, at Romsey police court, of being under the influence of drink whilst driving a motor car and of driving a motor car dangerously, and on the following day, at Bournemouth police court, of being in charge of a motor vehicle whilst under the influence of drink to such an extent as to be incapable of having proper control.

The Council's solicitor said that on the evening of March 14 a police constable saw a stationary motor car and found the respondent in it with his head resting on the wheel. When he got out he was unsteady on his feet, and a police surgeon said that he was drunk. Instead of appearing at the police court next day as he had undertaken to do, he again went out in his car and collided with another car, though without injuring any of the occupants. This was the offence for which he was summoned at Romsey, and a doctor testified that his gait was unsteady and his speech not normal, and also said that he was not fit apart from alcohol, and that a small amount would have a disproportionate effect upon him. On the following day he appeared at Bournemouth to answer the earlier charge. There the magistrates bound him over, and he agreed to abstain from intoxicating liquor and to be under the care of Dr. Watson Smith of Bournemouth for three months.

Dr. Wright, in evidence, said that he had practised in Bournemouth for nearly five years. He was extremely tired and worried on the evening of March 14, and was at the time recovering from an attack of influenza for which he had not laid up. Two years previously he had had pneumonia with an abscess in the lung and was ill for four months. Asked why he did not go to Bournemouth police court on the day on which he was summoned, he said that he set out to go, but on the way he felt "panicky" about the publicity which the case might receive and drove his car in another direction, which led to the second incident. He had since been under the care of Dr. Watson Smith for three months, during which time he had not practised, but he was now back again in harness.

A statutory declaration by Dr. Watson Smith was read in which he said that he had known the respondent since he came to Bournemouth, and had formed the opinion that he was a good and conscientious doctor. On the day of the offence he had been on duty for many hours, attending various calls, and had taken little or no food. He had been suffering from what appeared to have been influenza about a fortnight previously, and had post-influenzal depression. He was a man engaged in busy general practice and well respected by his colleagues in the profession. Statutory declarations were also read from another Bournemouth practitioner and from a clergyman, both speaking of Dr. Wright in the highest terms.

The Council did not see fit to direct the Registrar to erase the name.

The Council proceeded to the consideration of a charge against Arthur Patrick Kennedy, registered as of Newbridge Street, Wolverhampton, that in June last he was convicted at the Chester assizes of the following misdemeanour, namely, of conspiring with other persons unlawfully to procure the miscarriage of two women, and was sentenced to eight months' imprisonment.

The Council's solicitor, in outlining the facts, said that in November, 1938, a woman, suspecting herself to be pregnant, went to see Dr. Kennedy, to whom she was introduced by a man friend. Dr. Kennedy made arrangements for her to go to Crewe, where she was met by a woman who took her to a house and performed an illegal operation upon her. After the operation she stayed for some time at another house in Crewe, and when she was well again Dr. Kennedy himself drove her home. The man friend stated in evidence at the assizes that he paid Dr. Kennedy ten guineas. In the case of another woman in February, 1939, it was alleged that similar arrangements were made, an illegal operation being again performed by the same woman who had performed the first, but at another house. The payment was said to have been £5. Dr. Kennedy was charged jointly with the woman who had performed the two operations and with two other women at whose houses they had been done. One of the women was convicted on twenty-two charges, and another on six, but Dr. Kennedy's name was only mentioned in connexion with these two. At the trial Dr. Kennedy's counsel had said that there was no case to go to the jury, but the judge had overruled this. The jury had found him guilty on both charges, and the judge in passing sentence had said that he agreed with the verdict, and with that verdict went Dr. Kennedy's career. "If I punish two ignorant women, what can I say to an educated man who knew the terrible risks which were being run?"

Dr. Kennedy appeared before the Council, with Mr. Vincent Matthews, solicitor, who said that his client did not seek to dispute the conviction, but there were certain dissimilarities from the ordinary "procuring miscarriage" case. The man who was associated with the first woman was a personal friend of Dr. Kennedy and the doctor's better judgment was overridden by his friend's persuasions, though in law he knew that that was no mitigation. In the other case the girl concerned threatened to commit suicide, and here again the doctor was "more of a fool than a knave." Dr. Kennedy was 55 years of age, a married man with six dependent children, and so highly respected that a petition had been got up locally and signed by 4,000 people appealing to the Council to treat the case leniently. This was not a case of a professional abortionist, and the doctor himself did not take an active part in procuring abortion. Asked by the President whether Dr. Kennedy had received any money, Mr. Matthews replied that he did not think he had made any profit at all; the money had been paid to some of the others.

After consideration *in camera* the Council found the conviction proved and instructed the Registrar to erase the name of Arthur Patrick Kennedy.

Adultery with a Patient

The final case was that of George Holman, registered as of Dover House Road, Roehampton, who appeared on the charge of having committed adultery with Olive May Dunand, a married woman, of which adultery he had been found guilty by decree of the Divorce Court dated November 8, 1938, and made absolute on May 15, 1939, in the case of Dunand *v.* Dunand and Holman in which he was the co-respondent, the said Olive May Dunand, her husband, and family having been patients of his at all material times.

Dr. Holman was present and was legally represented by Mr. Thomas Carthew, K.C., on behalf of the London and Counties Medical Protection Society.

The Council's solicitor read the transcript of the Divorce Court evidence. The evidence given by Mr. Ernest Lennox Dunand, the husband, was to the effect that he first met Dr. Holman when he attended his wife at the birth of their second daughter, and Dr. Holman continued to be medical attendant to the family for many years, down to the early part of 1938. The two families became friends, and went to bridge parties at one another's houses. Early in 1934 Mr. Dunand noticed a change in his wife, who was then seen with the co-respondent from time to time. In 1935 she had a serious operation, and when her husband visited her at the nursing home she seemed indifferent to him. This feeling made itself more evident on her return home, and he spoke about it to Dr. Holman, who told him not to worry her. In 1936 she suggested a separation, to which he would not agree. Later he spoke again to the doctor about differences between his wife and himself, but the doctor told him to leave his wife alone. In another conversation the husband said that he thought the cause of the trouble was the wife's infatuation for the doctor and asked him not to see her so much. Eventually observation was kept on the movements of the respondent and co-respondent, and it was discovered that the doctor rented a flat which they visited, though they were careful not to be seen going there together. Thereupon the divorce proceedings were taken. It was admitted that professional relationship existed at all material times.

Mr. Carthew, on behalf of Dr. Holman, said that, having considered the matter, as there were no facts in dispute, he did not think it would be proper to waste the time of the Council in calling Dr. Holman. He added that Dr. Holman had married the lady as soon as the divorce was made absolute. Dr. Holman had been qualified for thirty years, and there had never been any complaint about his conduct in the past. He begged the Council to give the fullest consideration to the ameliorating features of the case.

Four statutory declarations in which the character of Dr. Holman was spoken of in high terms were put in by Dr. C. R. Box and Mr. Peter L. Daniel of London, Dr. Montague Rust, and Dr. S. W. H. Moul (Dr. Holman's partner).

After a consideration *in camera* the Council found the facts alleged against Dr. Holman in the notice of inquiry proved to its satisfaction, judged him to have been guilty of infamous conduct in a professional respect, and instructed the Registrar to erase his name from the *Medical Register*.

Correspondence

House Officers and the E.M.S.

Sir,—At this time when the Emergency Medical Service is being reorganized I should like to bring to more general notice certain anomalies in the position of the resident house officers in the special hospitals. I am a house-surgeon in a well-known London eye hospital which has a first-aid post in the basement staffed by outside personnel but which is apparently not otherwise recognized as an emergency hospital. I and my fellow-residents have not been recruited into the E.M.S. despite the fact that we are working under an ophthalmic surgeon who is a whole-time officer in this service. I understand that our colleagues in other special hospitals are in a similar position.

In the course of our routine work here we are daily treating A.R.P. workers, police, members of H.M. Forces, etc., as well as school children normally cared for by the L.C.C., and the usual civilian population. In the event of air raids on London I cannot see that our specialist services will be any less valuable. From recent articles and letters in the *Journal* it would seem that the eye is no less vulnerable than any other organ of the body to enemy action. It is not difficult to envisage the stream of eye casualties with which we should have to deal in the event of a serious air raid (*vide* the paper by Colonel A. Irvine-Fortescue in the *Journal* of October 28 (p. 846)). Since we house-surgeons have no official position in the E.M.S., what is to be our attitude to these patients? Should we leave them all to the one surgeon here who is an officer in the E.M.S. or should we perhaps direct them to the first-aid post for treatment by relatively unskilled hands? Obviously we should have to help: but why should we not do so officially as members of the E.M.S.?

I have several friends, qualified as recently as this year, and yet holding appointments in the E.M.S. in various general hospitals. Most of us in the special hospitals have already held house appointments in general hospitals and have spent some years in addition in the study of our special branch. Many of us hold higher degrees or diplomas. Is it too much to hope that we will be given at least an equal status with our junior colleagues of the general hospitals when the reorganized Emergency Hospital Medical Service finally comes into being?—I am, etc.,

London, Nov. 25. W. Kennedy Smiley.

Postgraduate News

The Fellowship of Medicine announces the following courses of instruction for Final F.R.C.S. candidates: (1) surgical tutorial classes, twice weekly, 4.30 p.m., December 12, 1939, to January 25, 1940, at the Medical Society of London, 11, Chandos Street, W., the first two lectures of which will be on herniae by Mr. R. J. McNeill Love, on December 12, and on intestinal obstruction by Mr. T. Meyrick Thomas, on December 14; (2) a comprehensive course at the Royal Cancer Hospital, from December 11, 1939, to January 27, 1940, daily from 9.30 a.m. to 1 p.m., including clinical instruction in the wards and out-patient department, lectures, *x*-ray and museum demonstrations, and tutorial classes (including answering set questions); (3) short courses in pathology will be given in January, each course consisting of two demonstrations (in the same week), from 2 p.m. to 3.30 p.m., and each course limited to six postgraduates.

WEEKLY POSTGRADUATE DIARY

British Postgraduate Medical School, Ducane Road, W.—*Daily*, 10 a.m. to 4 p.m., Medical Clinics, Surgical Clinics and Operations, Obstetrical and Gynaecological Clinics and Operations. *Daily*, 1.30 p.m. to 2 p.m., Post-mortem Demonstration. *Tues.*, 2.30 p.m., Lord Horder, Ward Clinic. *Wed.*, 11.30 a.m., Clinico-pathological Conference (Medical); 2 p.m., Prof. Dible, The Pathology of Some Bone Diseases; 3 p.m., Clinico-pathological Conference (Surgical). *Thurs.*, 2 to 4 p.m., Dr. Duncan White, Radiological Conference. *Fri.*, 2 p.m., Clinico-pathological Conference (Gynaecological).

Fellowship of Medicine and Postgraduate Medical Association, 1, Wimpole Street, W.—*Royal Cancer Hospital, S.W.*—Mon. to Fri., 9.30 a.m. to 1 p.m.; Sat., 11 a.m. to 1 p.m. Comprehensive Final F.R.C.S. Course. *Medical Society of London*, 11, Chandos Street, W.—Surgical Tutorial Classes, Tues., 4.30 p.m., Mr. R. J. McNeill Love, Herniae; Thurs., 4.30 p.m., Mr. T. Meyrick Thomas, Intestinal Obstruction. *Royal College of Surgeons of England*, Lincoln's Inn Fields, W.C.—Tues. and Wed., 2 p.m. to 3.30 p.m., F.R.C.S. Pathology Course. (*Strictly limited.*) *Brompton Hospital, S.W.*—Mon. and Wed., 4.30 p.m., M.R.C.P. Course in Chest Diseases.

Manchester Royal Infirmary.—*Tues.*, 3.30 p.m., Professor G. Jefferson, Head and Spinal Injuries; Mr. E. Matthews, Jaw Injuries. *Fri.*, 3.30 p.m., Professor J. Morley, Abdominal Injuries; Mr. A. Graham Bryce, Chest Injuries.

DIARY OF SOCIETIES AND LECTURES

Royal Society of Medicine

Section of Therapeutics and Pharmacology.—Tues., 2.30 p.m. Papers by Dr. C. A. Green: Preliminary Observations on the Use of Convalescent Serum in the Treatment of Acute Rheumatic Fever. Dr. I. H. Maclean: Prophylactic Vaccination against Whooping-cough.

Section of Comparative Medicine.—Wed., 2.15 p.m. Discussion: Nervous Affections in Man and Animals. Openers: Dr. G. M. Findlay, Dr. J. R. M. Innes, Dr. Dorothy Russell. Members of the Section of Pathology are specially invited to attend the meeting.

Chadwick Trust.—At Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W., *Tues.*, 2.30 p.m. Sir William Savage, M.D.: The Health Aspects of Canned Foods.

Medical Society of Individual Psychology, 11, Chandos Street, W.—*Thurs.*, 2.30 p.m. Paper by Dr. H. Crichton-Miller: National Emergency; Discipline and Leadership.

Medical Society of London, 11, Chandos Street, W.—*Mon.*, 4.30 p.m. Discussion: Induced Pyrexia. To be introduced by Dr. F. J. Nattrass and Dr. George Graham.

Royal Institution, 21, Albemarle Street, W.—*Tues.*, 2.30 p.m., Sir Frederick Keeble, F.R.S., Food Production in War Time.

South-West London Medical Society.—At Bolingbroke Hospital, Wandsworth Common, S.W., *Wed.*, 3 p.m. Dr. Allen Piggot: Demonstration and History of Pathological Specimens.

B.M.A.: Branch and Division Meetings to be Held

South Wales and Monmouthshire Branch: Swansea Division.—It has been proposed to hold a supper at the Hotel Metropole, Swansea, provided a sufficient number of members are prepared to attend.

Surrey Branch: Guildford Division.—At Royal Surrey County Hospital, Guildford, Thursday, December 14, 2.30 p.m. Dr. Dennis Embleton: "Cerebrospinal Fever."

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this heading is 9s. This amount should be forwarded with the notice, authenticated by the name and address of the sender, and should reach the Advertisement Manager not later than the first post Tuesday morning to ensure insertion in the current issue.

DEATH

Whiteside.—On November 18, 1939, William Cecil Whiteside, M.B., Ch.B.Ed. Aged 69.

SUPPLEMENT TO THE
BRITISH MEDICAL JOURNAL
LONDON SATURDAY DECEMBER 16 1939

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EXTENSION OF HEALTH INSURANCE

Dependants of Men on Active Service

The following letter has been sent by the British Medical Association to the Ministry of Health:

> Dear Sir,
>
> In recent weeks the Association has been giving careful consideration to the question of the medical attendance and treatment of the dependants of men who are serving in the ranks of His Majesty's Forces.
>
> It is realized that the pay and allowances of such men are in the majority of cases insufficient to enable them to provide the necessary medical attendance for their dependants. Such a state of affairs would leave for many the Public Assistance machinery as the only available channel through which they can obtain the attendance they need. It is considered to be wholly undesirable that the dependants of men who are serving their country at this time of national emergency should need to have recourse to the Poor Law as the agency for securing facilities which are essential to their well-being.
>
> It is within the knowledge of the Ministry that the Association's general policy is that the facilities now available to insured persons under the National Health Insurance Acts should be made available also to the dependants of such insured persons. While such an extension would, of course, be welcomed at the appropriate time, it is desired now to urge that the Government should accept responsibility for a limited extension by providing medical care, similar to that now available to insured persons, for the dependants of all men in the Armed Forces whose total income is below £250 per annum. The Association would be grateful if the Government would give immediate consideration to this question and inform the Association of its views.
>
> Yours faithfully,
>
> G. C. Anderson,
> *Secretary.*

A REMINDER TO SERVICE MEMBERS OF THE B.M.A.

Reduced Rate of Subscription

Members of the Association who are serving with His Majesty's Forces are reminded that under By-law 15 they are entitled to enjoy a reduced subscription rate of £2 2s. per annum. In connexion with the subscription which is due on January 1, 1940, the applications for which are now being prepared, steps have been taken to reduce the claim to £2 2s. in the case of those members of the Association known by the Central Office to be serving with the Forces. While every effort is being made to ensure accuracy, it is possible that in some cases a claim will be made for the ordinary home standard rate. If this should prove the case members entitled to claim the Service rate are asked to return the form, when an amended application will be sent.

Delivery of the "British Medical Journal"

The Central Office is anxious to ensure that the weekly issue of the *British Medical Journal* reaches all members of the Association, particularly those in the Services. In the majority of cases the office has been notified of any changes of address which have followed the calling up of men. Members who have not already done so, and who wish the *Journal* forwarded to them at their Service unit, are asked to furnish the Central Office with their address in order that the change may be made with the least possible delay.

The General Purposes Committee of the Society of Medical Officers of Health, which, in view of the difficulty of calling the Society's council together at the present time, has been given wide powers, decided at a recent meeting to seek a deputation with the Ministry of Health and the Ministry of Home Security on certain defects in the administration of the medical and public health aspects of civil defence and casualty treatment services. The deputation, which will include Dr. Cyril Banks, Professor R. M. F. Picken, and Drs. James Ferguson, Gordon Lilico, and T. N. V. Potts, will also urge consultation between the Departments and the Society's representatives whenever new points of policy on these matters are under consideration.

At the same meeting the committee decided to ask the Ministry of Health to postpone the new scheme for the supply of milk at a reduced price to nursing and expectant mothers and children under 5. It was felt that the proposals might have a detrimental effect on maternity and child welfare work in so far as provision of milk under the present schemes was definitely related to attendance at welfare centres; further, many medical officers of health believed that dried milk had scientific advantages over liquid milk in these schemes. It was also considered that the additional administrative burden at a time when public health departments were fully occupied would be a serious matter.

Correspondence

Terms of Service and Air Raid Casualties

SIR,—In the *Supplement* of November 4 (p. 215) there appeared under "War Notices" in a paragraph on the general practitioner and air raid casualties the sentence: "In so far as the injured persons are entitled to medical benefit under national health insurance they are already provided for."

On February 15 of this year a conference of all Local Emergency Committees took place in the Great Hall of B.M.A. House, and several hundred representatives from all over the country attended to hear the Minister of Health, Dr. Elliot, give an address on the medical services in war time. After his address a number of questions were submitted in writing to the Minister, of which one (by the undersigned) asked whether medical attendance on war casualties would form part of the terms of service under the N.H.I. Acts. The Minister's reply (of which there must be shorthand records in the hands of the Secretariat) was an unequivocal assurance to the contrary, which was greeted with some cheerful applause.

While most doctors are quite ready to do any kind of war work they are not prepared to have so great a risk thrust upon them without some additional consideration for their services. The ever-rising cost of living, petrol, drugs and dressings, the high taxation, decreasing panels, and moribund private practices are all factors calling for compensation somewhere, if we are to continue paying our bills and subscriptions. There is a growing feeling among the profession that a small share of the £6,000,000 which this country is spending a day on war alone might be reserved for providing the nation with *rational* and *adequate* services such as ours.—I am, etc.,

London, W.10, Nov. 28. GEORGE DE SWIET.

⁂ The text of a letter from the British Medical Association to the Ministry of Health urging that treatment of air raid injuries should be outside the scope of medical benefit under national health insurance was published in the *Supplement* of December 9, page 237.—ED., *B.M.J.*

Medical Staffing of First-aid Posts

SIR,—On December 1, 1939, a meeting was held of practitioners who had undertaken service at first-aid posts in the area of the Wandsworth Division of the B.M.A. Out of a total of forty, twenty-seven attended.

The latest proposal of the Ministry of Health for the medical staffing of aid posts was discussed, and it was the unanimous opinion of the meeting that practitioners appointed to be in charge of aid posts in the area of the Wandsworth Division should decline service unless a deputy was properly appointed to each post and suitably remunerated. It was felt that for a sum of £75 per annum, entailing in addition to other duties three visits of inspection and instruction a week, the medical officer in charge of the post could not reasonably be expected to remain on call for twenty-four hours a day, and that for no retaining fee at all a deputy could not be expected to hold himself in readiness during such times as the practitioner in charge was not available. It would appear more than probable that the ultimate result would be that the services of any practitioner available would have to be requisitioned in the event of the practitioner in charge not being available. This, it was felt, was contrary to the public interest, inasmuch as it would appear highly desirable, under the conditions likely to prevail after an air raid and bearing in mind that the lay personnel in many cases have as yet to see a badly cut finger, that a practitioner familiar with the precise location of the post, the personnel, the distribution of instruments, drugs, and dressings, and the type of appliance available, as well as the general lay-out of the post, would be a *sine qua non* of efficient service.

The views of other practitioners interested in first-aid work would be welcomed.—I am, etc.,

R. A. MITCHELL, M.B.,
Dec. 4. Honorary Secretary and Emergency Officer, Wandsworth.

Capitation Fee in War Time

SIR,—I wonder what other general practitioners are thinking about the new financial problems presenting themselves in these troubled times. To meet the increased cost of living we find that wages, allowances, unemployment assistance, etc., are being increased. The farmer is going to be permitted to sell milk at one penny per quart more after January 1, 1940, because he must meet the increased cost of feeding-stuffs. Is the panel practitioner given an increased mileage allowance under the national health insurance to meet the increased cost of petrol? Is the practitioners' capitation fee increased to meet the loss in income arising in circumstances consequent on present conditions? Is it fair or honest to increase our fees to private patients to pay for the increased cost of travelling to insured patients?

What are the answers to these questions? If the time is ripe for increased wages, prices, etc., is it premature to ask for some consideration of the above-mentioned matters?—I am, etc.,

Callander, Dec. 2. F. C. M. MCILWRICK, M.B., Ch.B.Ed.

⁂ The text of a letter which the Insurance Acts Committee of the B.M.A. has sent to the Ministry of Health on the capitation fee was published in the *Supplement* of December 2, p. 231.—ED., *B.M.J.*

SIR,—In the *Supplement* of December 2 (p. 231) you quite rightly call attention to the capitation fee question. Admittedly this fee is totally inadequate and should be in the region of 15s. per annum for the service now given under the National Health Insurance Acts, but there is one still more serious factor at work to-day that you pay no attention to at all. When the Military Training (Militia) Act was passed in April we were told that those men called up would remain upon our panel and would not be struck out. Since September, however, our losses have been serious, and each month we are asked by the Panel Committee to send in the records of young men who have "joined the Forces." Our panels are steadily declining, costs are rising quickly, taxation is already savage, and we are signing on very few new panel patients, so we cannot maintain our figures.—I am, etc.,

Lincoln, Dec. 3. C. A. H. FRANKLYN.

Fees for Emergency Treatment and Anaesthetics

SIR,—A notice has been circulated in the area that, acting on the suggestion of the Minister of Health, the insurance committee, in conjunction with the panel committee, has decided that for the period of the war emergency claims for fees for the administration of anaesthetics and for emergency treatment shall be suspended [*sic*]. I shall be pleased to know if the two committees have the power thus to set aside one of the provisions of the Act. And I shall be pleased also to learn just how this decision is going to help to win the war or in any way affect its course.—I am, etc.,

Ludlow, Nov. 24. T. HUNTER.

⁂ The Secretary of the British Medical Association makes the following comment: The proposal that claims for emergency treatment and anaesthetists' fees should be discontinued for the duration of the war was one of a number of suggestions for reducing the administrative work normally done by panel and insurance committees. These special payments are first charges on the Local Practitioners' Fund before its distribution to individual practitioners.

Medical Students and Military Service

SIR,—Your correspondent "Alpha," whose letter appears in the *Supplement* of December 2 (p. 235), suggests that still more medical students should be "reserved." While in the last war there was a great shortage of doctors and students, this time there are already quite enough of both, and I suggest that it would be more in the national interest if, instead of unnecessarily increasing the number of reserved men, more were left for the fighting forces.

I cannot quote figures (comparing the number of doctors and students available now with the number in 1914); but in view of my difficulty in obtaining employment—whether in a hospital or the R.A.M.C.—I conclude that there is already a sufficient number of doctors. There is already a reserve of several thousand students, without adding more. If in the last war there were too few doctors and students, is there not a danger of the pendulum swinging too far in the opposite direction this time? For one thing, how on earth are we all to get jobs when the war is over?—I am, etc.,

Dec. 2. NEWLY QUALIFIED.

EMERGENCY MEDICAL SERVICE OF NORTHERN IRELAND

The Ministry of Home Affairs for Northern Ireland has issued the following memorandum on the conditions of service in the Emergency Medical Service.

1. Appointment to the Emergency Medical Service will be made by the Ministry and will continue for the duration of the war or for such period as the Ministry may determine. Subject to the essential needs of the service and the advice of the Emergency Committee of the British Medical Association the Ministry will be prepared to release members whose services are required by His Majesty's Forces.

2. The duties of members in the treatment of casualties will include treatment of persons transferred from one hospital to another by direction of the Ministry in order to provide for casualties as well as casualties caused directly by hostile attack, and of such other persons or classes of persons as may from time to time be deemed to be casualties; and will include treatment in extern departments of hospitals as may be necessary.

3. The duties of members will be performed in such hospital or hospitals in Northern Ireland as the Ministry may from time to time direct, but duty will, so far as possible, normally be assigned in the hospital to which the member is attached as a member of the staff.

4. Each member will attend for duty at the required hospital at such times as may be specified by the Ministry in any general or specific direction, but except in the event of an actual or impending attack or a special emergency members will be permitted to attend at such times convenient to themselves and to the hospital authority as are consonant with the due performance of their duties.

5. Members may engage in private practice and hold appointments in so far as is consistent with the performance of their duties.

6. The remuneration of members of the Emergency Medical Service will be provided by payment to the accredited representative of the medical staff of each hospital in which casualties are treated of a capitation allowance at the rate of 2s. 6d. per day for each casualty (as defined in paragraph 2 of this memorandum) under treatment in that hospital. The remuneration of individual members serving in each hospital, whether ordinarily attached or temporarily assigned to the staff of that hospital, will be paid by the accredited representative out of the fund provided by the capitation allowance in such proportions as the members so serving shall determine. The accredited representatives will account to the Ministry for all moneys so received and paid by them at such times and in such manner as the Ministry may require.

7. Selected members who are required to proceed in an emergency or for special duty to hospitals to which they are not ordinarily attached or normally assigned for duty will, in lieu of participating in the capitation allowance at the hospital to which they proceed, receive remuneration on a sessional basis according to the following scale:

Specialists.—2½ guineas per session up to a maximum of five sessions in any one week and 2 guineas for each additional session, subject to a general maximum of 120 guineas in any one quarter.

Assistants to Surgical Specialists.—1½ guineas per session up to a maximum of five sessions in any one week and £1 5s. for each additional session, subject to a maximum of 75 guineas in any one quarter.

Anaesthetists.—If required to provide their own apparatus, 2 guineas per session. If not required to provide apparatus, at the same rates as assistants.

(If anaesthetic drugs are not provided by the hospital an allowance for drugs used will also be made.)

For the purpose of this paragraph a session consists of a period of two hours or any part thereof, running from the time of departure for duty and terminating on return to home or normal station provided that the time occupied in travelling is shown to the satisfaction of the Ministry to be reasonable in the circumstances. Payment of sessional fees will be made by the Ministry on the certificate of the hospital officer who has directed the duty.

8. No allowance will be paid in respect of travelling or subsistence in proceeding to assigned posts for duty. Where, however, members are required under paragraph 7 of this memorandum to proceed on special duty more than five miles from their normal station the member in whose car they travel will receive an allowance at the rate of 3d. per mile, unless petrol is provided at public expense; a party not exceeding four in number will be expected to travel in one car. Arrangements will be made for journeys on special duty.

9. Members of the Emergency Medical Service will be entitled to the benefits of any arrangements which may be made in respect of the death or injury on duty of members of Civil Defence Services. Membership will not, however, confer any other right to pension, gratuity, or compensation on termination of services.

10. Directions and instructions of the Ministry will be communicated to members by the officers authorized by law (the Minister, Parliamentary Secretary, Permanent Secretary, or an Assistant Secretary), or by the Chief Medical Officer or the hospital officer of the Ministry. No directions or instructions, unless issued by an authorized officer, should be accepted by members nor will be recognized by the Ministry.

Naval, Military, and Air Force Appointments

ROYAL NAVAL MEDICAL SERVICE

Surgeon Commander H. E. Scargill has been placed on the Retired List with the rank of Surgeon Captain.

Surgeon Lieutenant R. M. Kirkwood has been transferred to the Emergency List.

Surgeon Lieutenant (Emergency List) T. F. Miles to be Surgeon Lieutenant-Commander (Emergency List).

ROYAL ARMY MEDICAL CORPS

Captain A. N. T. Meneces to be Major.

Lieutenant J. M. Corall to be Captain, with seniority October 22, 1938 and precedence next below Captain B Lapedus; Lieutenant S. O. Bramwell to be Captain, with seniority October 22, 1938, and precedence next below Captain J. M. Corall.

Lieutenants F. B. Bagshaw and H. J. A. Richards to be Captains, with seniorities November 4, 1938, and November 5, 1938, respectively.

Lieutenants J. H. Gibson, H. A. Bowker, H. C. Jeffrey, G. L. Humphreys, J. J. Justice, D. A. Ireland, G. F. Edwards, J. Baxter, H. H. Johnston, A Bennett, P. E. R. B. Unwin, R. G. Davies, D. S. Toole, R. D. Bell, A. Crook, R A. Daly, and E. T. St. M. Brett to be Captains.

The appointments of Lieutenants F. B. Bagshaw and H. J. A. Richards have been antedated to November 4, 1937, and November 5, 1937, respectively, under the provisions of Article 36, Royal Warrant for Pay and Promotion, 1931, but not to carry pay and allowances prior to November 4, 1937, and November 5, 1937, respectively.

ROYAL AIR FORCE MEDICAL SERVICE

Air Commodore W. Tyrrell, D.S.O., M.C., has been granted the acting rank of Air Vice-Marshal.

Air Commodore B. A. Playne, D.S.O. (R.A.F. ret.), has relinquished, at his own request, the rank of Air Commodore whilst re-employed with the Royal Air Force and has been granted the rank of Group Captain.

ROYAL AIR FORCE RESERVE: MEDICAL BRANCH

R. S. Maclatchy has been granted a commission as Flying Officer in Class D, with effect from November 27, 1939, and with seniority November 27, 1933.

AUXILIARY AIR FORCE: MEDICAL BRANCH

Flying Officers N. R. Smith B. Rothery, and G. A. H. Norman to be Flight Lieutenants.

ROYAL AIR FORCE VOLUNTEER RESERVE: MEDICAL BRANCH

D. D. MacDonald has been granted a commission as Flying Officer. (Substituted for the notification in the *London Gazette* of October 20.)

The following have been granted commissions as Flying Officers for the duration of hostilities: J. S. Astbury, J. Apley, J. R. Connelly, P. C. Conran, T. A. James, M. J. Lowther, W. H. Mirkin, K. D. F. Morle, M. Stein, M. Pearson, J. S. Davies, and J. L. Trainer, L.R.C.P. and S., L R.F.P.S., L.D.S.

REGULAR ARMY RESERVE OF OFFICERS

ROYAL ARMY MEDICAL CORPS

Majors C. de W. Gibb and A. Mearns have ceased to belong to the Reserve of Officers on account of ill-health.

Captain T. S. Cave, from Regular Army Reserve of Officers, Royal Artillery, to be Captain, with seniority November 13, 1936. (Substituted for the notification in the *London Gazette* of September 8.)

Captain F. P. Freeman, M.C., has ceased to belong to the Reserve of Officers on account of ill-health.

L. W. H. Bertie, late Second Lieutenant, Special List, to be Lieutenant. (Substituted for the notification in the *London Gazette* of September 15.)

SUPPLEMENTARY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS

The notification in the *London Gazette* of September 12 regarding Lieutenant A. M. Critchley has been cancelled.

The notifications in the *London Gazette* of October 6 regarding Lieutenants A. C. Stevenson and D. A. Lowe have been cancelled.

TERRITORIAL ARMY

Colonel L. B. Cane, T.D., A.D.M.S., 54th (E.A.) Division, has retired on completion of tenure.

Royal Army Medical Corps

Lieutenant-Colonel A. J Gibson, T D., has relinquished his commission on account of ill-health.

Major I. H. Lloyd-Williams, from R.A.M.C., temporary commission, to be Major.

Major A. Barr has relinquished his commission on account of ill-health.

Captain F. W. Bury, from Territorial Army Reserve of Officers, R.A.M C., to be Captain.

Captain R. J. Watson, M.C., from Territorial Army Reserve of Officers, General List, Royal Artillery, to be Captain, with seniority September 15, 1935.

Captain G. S. Adams from Territorial Army General List, O.T.C., to be Captain with seniority December 28, 1937.

Captain D. Macleod has relinquished his commission on account of ill-health.

Lieutenant J. C. Caird, from Territorial Army Reserve of Officers, Scouts, to be Captain, with seniority February 2, 1937.

Lieutenant J. K. Sutherland to be Captain, with seniority May 29 1938.

Lieutenant P. J. B. Dyce has resigned his commission.

Lieutenants J. Black and W. L. Fulthorpe have relinquished their commissions on account of ill-health.

Lieutenant W. I. Walker to be Captain.

Lieutenant R. I. Mitchell from Territorial Army General List, Infantry Unit, O.T C., to be Lieutenant.

Lieutenant L. R. Flowers, from Territorial Army Royal Berkshire Regiment, to be Lieutenant.

Lieutenant D. J. Macrae, from Seaforth Highlanders, to be Lieutenant.

Second Lieutenant F. S. Fiddes, from Territorial Army Reserve of Officers, General List, Infantry, to be Lieutenant.

To be Lieutenants: J. C. Hill, C. D. Weir, J. A. Reid, W. G. H. Allen, J. E E. Hughes, T. A MacGibbon, and T. L. Oliver.

LAND FORCES: EMERGENCY COMMISSIONS

Royal Army Medical Corps

The following to be Lieutenants and have been promoted to the rank of Acting Colonel: Lieutenant-Colonel C. M. Page, D.S.O., R.A.M.C., Militia (retired) and has relinquished the rank of Lieutenant-Colonel; Major A. W. Stott, R.A.M.C., T.A (retired), and has relinquished the rank of Major; Captains J R. Rees, R.A.M.C. (retired), and H. Yellowlees, O.B.E., R A M.C. (retired), and have relinquished the rank of Captain; Sir C G. Gordon-Watson, K.B E., C.M.G., H. L. Tidy, F. A. Juler, and J. T. Ingram

The surname of C. E. Hurley is as now described and not as notified in the *London Gazette* of November 15.

Lieutenants H. S. Calder and A. P. Procter have relinquished their commissions on account of ill-health.

To be Lieutenants: A. W McKenny-Hughes, F J C. Johnstone, D. Mackenzie, J. R. Macintyre, G. C. Cooper, H. B Hodson, J. M. Houston, W. Belton, W D. R. Thompson, R. J. Tolcman, T. P. Sewell, G. F. Anderson, J. A. A. Duncan L. D. Dennard, J. C. B. Bone, J. B. C Madge, W. S. Braidwood, G. McL. Gorrie, A. Lutton, G. M. Heap, G. Woodruff, C. H. Comrie, E. E. Satchwell, A. G. Williams, A. C. Barker, C. E. M. de Gruchy, F. Duval, W. Falconer, L. M. Rubein, G. H. Darke, L. Griffiths, O. F. Barr, E. Gillett, F L. Lydon, D. G. Adamson, L. D. M. Gavin, J. A. Gordon, R. Semple, S. W. H. Stuart, H. R G. Davies, C J. D. May, C. N. Mills, J. L. Reynolds, F. J. C. Smith J. L. Treneman, P. K. Walker, F. Ayrey, W. O. Macfeat, D. W. Rossiter, R. W. Gunderson, T E. Henderson, L. V. Macdonald, D. J. A. MacLean, R. H. M. Ross, R H. D. Short, J. E. L. Bendor-Samuel, H. Rosenberg, J. R. Sweeting, A. Taylor-Smith, G. W. Almeyda, J. B. Dowe, M Gaba, A. O. Karstaedt, C. J. Evans, A. M. Baillie, M. A. Chamberlain, A Findlay, G. A. D. Gordon, H. W. Gray, G. Ralston, G. Rosemont, L. S. Woolf A. L. Dick, A. W. C. Mellor, E. A. Robertson, T. J. Steven, A. J. Warren, F. J. Biddle, F. J. McDermott, R. Macnair, R. H. Mumford, L. Saunders, D. R. Buller, M. W. Paterson, E. S. Ashforth, T. A Clarke, B. W. Macdonald, G. H. Evans, G. N. McLaren, W. Gavin, H. Graham, A. P. R. Borrowman, T. J. Clune, W. L. Young, N. F. Seed, W. Murphy, A. Reid, T. Duncan, I. Lloyd, W. G. P. Mair, I. Murray, F. H. Morrell, G. L. Ritchie, R. F. White, R C S. Dick, A W. Green, W. M. K. McLellan, A. McDiarmid, E. Doherty, F. N. Woods, J. W. McLaren, H. E. Brown, N B. Walker, A. Henderson, E. I. Harper, W. Henderson, J. Thomson, R. D. Mackenzie, J. D. McLennan, J. C. G. Whitelaw, G. E Calvert, W. N. Murray, A. V. Stevens, J. W. Doupe, J A Robertson, A. J. Martin, J. F. Venables, and H. H Clay.

To be Medical Officers with the relative rank of Lieutenant: Muriel Boycott and Ethel Whitby

INDIAN MEDICAL SERVICE

The Secretary of State for India has appointed to the Civil Branch of the Indian Medical Service the following officers of the Indian Medical Service with effect from the dates indicated in parentheses: *Government of India:* Major S. S. Bhatnagar (June 26, 1938); Major Jaswant Singh (July 11, 1938); Major M. K Kelavkar, M.B.E. (October 20, 1938); Major W. F. Cooper (November 9, 1938). *Bombay:* Captain L. Feinhols (August 5, 1938). *Bengal:* Captain J. W. D. Goodall (September 18, 1938); Major E. A R. Ardeshir (November 26, 1938). *Punjab:* Captain F. V. Stonham (September 27, 1938). *Bihar:* Captain W. B. Stiver, L.M.S. (August 28, 1938); Captain F. W. Whiteman (September 8, 1938). *Central Provinces:* Captain M. Sendak (July 29, 1938); Captain F. C. Leach (December 6, 1938). *Orissa:* Captain J. W. Bowden (October 11, 1938).

The Secretary of State for India has sanctioned the reversion to military employment of the following officers of the Indian Medical Service (Civil) with effect from the dates indicated in parentheses: *Government of India:* Major W. F. Cooper (December 30, 1938). *Central Government:* Lieutenant-Colonel R. L. Vance (November 12, 1937); Lieutenant-Colonel W M. Will (October 31 1938); Captain C. J. H. Brink (November 27, 1938); Colonel E. G. Kennedy (April 20, 1939). *Madras:* Major J. S. McMillan (September 1, 1937); Lieutenant-Colonel C S. V. Ramanan (November 6, 1937). *Bombay:* Captain P. I. Franks (October 29, 1937); Captain W. W. Laughland (June 4, 1938). *Bengal:* Lieutenant-Colonel R. E. Flowerdew, C.I.E. (May 25, 1937); Major B. N. Hajra (February 14, 1938); Major A. K. Gupta (February 14, 1938). *United Provinces:* Lieutenant-Colonel B R. Chaudhri (April 17, 1939); Captain Jaswant Singh (September 10, 1937); Major R. D. Alexander (August 3, 1938). *Bihar:* Captain W. B Stiver (November 12, 1938); Captain F. W. Whiteman (December 5, 1938); Major G. P. F. Bowers (October 4, 1937); Lieutenant-Colonel H. M. Strickland (November 10, 1937). *Central Provinces and Berar:* Lieutenant-Colonel R. A. Logan (November 20, 1937); Lieutenant-Colonel J. Carrey (March 4, 1938); Lieutenant-Colonel J. E. Ainsley (August 2, 1938); Major V E. M Lee (August 19, 1938).

Major-General E. W. C. Bradfield, C.I.E., O.B.E., K.H.S., Director-General, Indian Medical Service, has been granted leave on average pay for one month and one day and in continuation leave on half average pay for four months and six days with effect from September 29.

Colonel G. G. Jolly, C.I.E., V.H.S. Inspector-General of Civil Hospitals, Punjab, has been appointed to officiate as Director-General, Indian Medical Service, with effect from September 29

Colonel G. G. Jolly C.I.E., V.H.S., has been granted the local rank of Major-General, without effect on pay and pension, whilst officiating as Director-General, Indian Medical Service

Colonel Sir A. J. H Russell, C.B.E., has retired from the Service.

The retirements of Colonel J A S. Phillips, C.I.E., Lieutenant-Colonel F. A. Barker, C.I.E, O.B.E, and Lieutenant-Colonel S. A. Phatak, have been permitted subject to His Majesty's approval.

Major H W. Farrell an officiating Agency Surgeon, has been employed as Chief Medical Officer and Inspector-General of Prisons in Baluchistan, with effect from October 4, 1939

Major E. A. O'Connor, an officiating Agency Surgeon, has been appointed as Civil Surgeon, Quetta-Sibi with effect from October 5, 1939.

Major F. H. Whyte has been appointed to the post of Civil Surgeon, New Delhi, with effect from October 9, 1939

Major K H. A. Gross, M C., an officiating Agency Surgeon, on return from leave has been appointed as Agency Surgeon in Bundhelkand with effect from September 30, 1939.

Majors R. W. H. Miller and P. A. C. Davenport to be Lieutenant-Colonels.

Captains F. M. Khan and D Datt to be Majors.

Captain M. G Saincer to be Major (provisional).

Diary of B.M.A. Central Meetings

December

20 Wed. Executive Committee, 2 p.m.
29 Fri. Journal Board, 11.45 a.m.

B.M.A.: Meetings of Branches and Divisions

Edinburgh and South-East of Scotland Branch: City of Edinburgh Division.—Members of the Division are informed that Professor Stanley Davidson and his staff will hold a clinic in Ward 27 in the Royal Infirmary, Edinburgh, every Tuesday from 2 to 4 p.m., for patients suffering from the chronic rheumatic diseases.

Hertfordshire Branch: St. Albans Division.—At Wellington Court, Bricket Road, St. Albans, Friday, December 15, 8.30 p.m. Dr. E. R. Cullinan: "Recent Drugs and their Uses."

Postgraduate News

The Fellowship of Medicine announces the following courses of instruction for Final F.R.C.S. candidates: (1) surgical tutorial classes, twice weekly, 4.30 p.m., continuing until January 25, 1940, at the Medical Society of London, 11, Chandos Street, W., the lectures for this week being on the sympathetic nervous system by Mr. G. C. Knight on December 19, and on testicle and prostate by Mr. Kenneth Heritage on December 20; (2) a comprehensive course at the Royal Cancer Hospital daily from 9.30 a.m. until 1 p.m., continuing until January 27, 1940; (3) short courses in pathology will be given in January, each course consisting of two demonstrations (in the same week) from 2 p.m. to 3.30 p.m., and each course limited to six postgraduates; (4) an evening course at St. Mary's Hospital on Tuesdays, Wednesdays, and Thursdays, at 8 p.m., from December 19, 1939, to January 25, 1940 (excluding Christmas week), and consisting of tutorial classes on Tuesdays and Thursdays and a clinical class on Wednesdays.

WEEKLY POSTGRADUATE DIARY

Fellowship of Medicine and Postgraduate Medical Association, 1, Wimpole Street, W.—*St. Mary's Hospital*, W.—Tues Wed., and Thurs., 8 p.m., Final F.R.C.S., Clinical and Tutorial Course. *Royal Cancer Hospital*, Fulham Road, S.W.—Daily 9.30 a.m. to 1 p.m., Comprehensive Final F.R C.S. Course. *Brompton Hospital*, S.W.—Mon. and Wed., 4.30 p.m., M.R.C.P. Course in Chest Diseases. *Medical Society of London*, 11, Chandos Street, W.—Surgical Tutorial Classes Tues., 4.30 p.m., Mr. G. C. Knight, Sympathetic Nervous System; Wed., 4.30 p.m., Mr. Kenneth Heritage, Testicle and Prostate.

Manchester Royal Infirmary.—*Tues.*, 3.30 p.m., Dr. F. R. Ferguson, "Air Raid" Neuroses and their Treatment. *Fri.*, 3.30 p.m., Drs. J. Wharton and P. B. Mumford, Poisoning by "Mustard Gas" and Other Poison Gases, with Special Reference to the Treatment of Lesions of the Eyes and Skin

VACANCIES

Examining Factory Surgeons.—The following vacant appointments are announced: Wollaston (Northamptonshire); Yarmouth (Isle of Wight); Balfron (Stirlingshire). Applications to the Chief Inspector of Factories, Home Office, Whitehall, S.W.1, by December 28.

APPOINTMENTS

Burden Neurological Institute, Stapleton, Bristol.—Honorary Surgeons: Wylie McKissock, M.S, F.R.C.S., and F. Wilfred Willway, M.S., F.R.C.S.

Lewis, J. T. R., M.D., D.P.H., Deputy Medical Officer of Health and Deputy School Medical Officer of the County Borough of Croydon.

Payne, D. D., M.D., D.P.H., Medical Officer of Health and School Medical Officer of the Borough of Harrogate.

Examining Factory Surgeons.—Edward Johnson, M.B., Ch.B., for the Cranborne District (Dorsetshire); J. E. R. Palmer, L.M.S.S.A., for the Megavissey District (Cornwall); H Stewart, M.B., Ch.B., for the Littlehampton District (Sussex).

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this heading is 9s. This amount should be forwarded with the notice, authenticated by the name and address of the sender, and should reach the Advertisement Manager not later than the first post Tuesday morning to ensure insertion in the current issue

MARRIAGE

Cook—Reid.—On December 8, James Cook, F.R.C.S.Ed., to Carolyn Winona, daughter of Colonel and Mrs. H. G Reid.

DEATH

Coleman.—On December 10, 1939, at Sandford, Llandudno, Olive May, the dearly loved wife of A. H. Coleman, F.R.C.S., in her 53rd year. Interred Tuesday, December 12

SUPPLEMENT TO THE

BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 23 1939

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IMPLICATIONS OF HEALTH INSURANCE IN AMERICA*

BY

J. A. HANNAH, M.D.

Managing Director, Associated Medical Services Incorporated, Toronto

During the past two years my full time has been devoted to the subject of health insurance, in an endeavour to do something practical to bring the profession in Ontario to an awareness of its duty and responsibility toward this social problem which has become as important as our scientific advances. Let us make no mistake; only in so far as we as a profession know the problem of health insurance and are willing to cope with it will there be any form of satisfactory answer. It is suicide for us to allow laymen, politicians or otherwise, to gain control of this situation. This we have found through our experience in hospital work. Hospitals are no longer the servants of physicians, as originally intended: the servant has become the master, to the detriment of both profession and public. This problem has never been satisfactorily answered, nor will it ever be until the profession has assumed its full responsibility, not only in regard to practice but also in relation to its economic adjustment.

I should like to take you with me through a very tangled maze of developments in Ontario which have led to my presence here to-day. In so doing it may be that we can learn something of the responsibility of the profession in relation to this tremendous problem of health insurance in America.

Demand for Health Insurance in America

As early as 1882 European countries felt the urge for socialized medicine, and since that time some thirty countries have adopted insurance in one form or another. There are several reasons why we in Canada and the United States have not found it necessary or convenient to socialize the practice of medicine: (1) Our populations have for the most part been scattered over large areas; this sparsity has rendered it difficult to systematize our economic methods and for the public to become aware of the needs of their fellow men. (2) At the same time our standard of living at its worst has been higher than that of the masses in Europe. (3) This last, combined with the existence of a virile, rugged individualism, has delayed the demand for social medicine until the recent depression, which, like our winter, seems so loath to leave us.

Factors other than the "depression" have also, however, been at work bringing about a demand for a change in our medical economy.

1. Every advance in scientific knowledge brings with it its increased cost in application to the patient. Insulin, despite all its benefits, adds to the accumulating cost of medicine. The rapidity with which expensive *x*-ray equipment becomes obsolete increases costs. However beneficial, these new therapeutic methods do add to the cost, and to the ever-increasing difficulty of meeting it from income, taxation, or philanthropy. The only apparent diminishing entity has been the income of the physician, who has assumed a larger and larger proportion of the cost of medical care without remuneration.

2. Another factor contributing to public demand has been the change in our general economic standards and methods. It used to be accepted as good practice to save your pennies to buy the necessities. Now it seems to be accepted practice to buy the luxuries and pay as you can (or perchance, if, as, and when they catch you). It works. There is one car for every five people in Ontario, despite the fact that 94 per cent. of earners have incomes of less than $3,000. These same people have also their over-stuffed furniture, their radios, and other luxuries.

3. In contrast with this economic revolution in regard to the purchase of necessities and luxuries, medical economy has gone on its own way, believing that nothing could or should be done about it, with the result that medical care has been neglected, while the profession finds an ever-increasing hostility towards the so-called "high cost of medical care." It is an interesting commentary on our methods that no one complains about the high cost of tobacco, cosmetics, or motion pictures; yet there is as much or more money spent on these things as on medical services. Why? Because, if a package of cigarettes is finished, another may be bought for a quarter or a dime. If neither is available our friend will share his, and consumption continues to the profit of the tobacco combine. Not so the cost of medicine! While our client remains well he may contribute nothing to the maintenance of physician, hospital, nurse, or equipment. When he does fall ill he must pay not only for his illness but also for his preceding period of health. The members of the profession and the equipment must be available in health as well as illness. To add to the general confusion, illness impairs earning capacity, and no one, not even the physician, can guess when the illness will occur or what the magnitude of the bill will be.

Under such conditions it is little wonder that there has been a persistent and steadily increasing demand for some method of budgeting against the cost of medical care, both from the public and the profession. Let us make no mistake: if we who know something of the intricacies and intimacies of practice do not meet the situation, then others who are less well informed but as well intentioned will, and all will be subject to a period of dissatisfaction and confusion, and progress will be impeded scientifically as well as economically.

Imminence of Socialized Medicine

1. Until recently it was not unusual for certain sections of the profession to insinuate that such arguments were a figment of the imagination, and if the proponents belonged to the profession a more sinister meaning was attached. The facts have become too apparent and concrete to be denied any longer. In Canada, British Columbia has an Act on her statute books to implement health insurance. The recent Minister of Health of Alberta

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* Delivered before the Welfare Committee of the Medical Society of New Jersey, April 16, 1939.

has indicated many times that had his Government been returned health insurance would have been an accomplishment. Saskatchewan has had a form of municipal practice for some years. Ontario has had legislation on at least one occasion to bring down, but for some reason has not done so.

2. Recent events in the U.S.A. are too fresh and obvious to require comment from me. I will make only one comment on your country's projected plan: the present estimated contribution from all sources will prove but a mere pittance of what the projected plan will eventually have cost. In both the U.S.A. and Canada there has been an ever-increasing number of voluntary plans coming into effect, particularly for hospitalization. Here again, unless carefully guarded, lies a menace to the profession. At the last annual meeting of the American Hospital Association, held in Dallas, Texas, the New York Hospital plan succeeded in getting a resolution through the convention giving the plan the right to provide its ward subscribers with medical service. Once again the profession is on the verge of surrendering more of its birthright and becoming even more the handmaid of institutions originally designed to be our helpmate.

3. Add to the foregoing the evils of lodge practice, some forms of industrial medicine, and mercenary forms of group practice, and there appears to be a formidable array of encroaching forces making for the destruction of medical practice as it has been known and handed down through the years. If each in turn is carefully analysed it will be seen that it is based on purely economic factors, with little or no regard for that intangible something that raised medicine above the ranks of a trade or a profession and combines both into an art, the tools of which are human understanding, the laws of which know only the needs of human ailment. It knows no race, creed, nationality, or social strata. Such is the heritage which we must protect.

How shall we meet this challenge? Surely not by any attitude of *laisser faire,* hush-hush, or sterile criticism. It must be met in the same manner as we have met our manifold research problems in our scientific field. Some of us must brave the taunts of our so-called economic experts to the point of venturing into research on the subject. Who better to do this than the profession? In my short experience it has become apparent that no one knows what the problem involves. Statisticians, actuaries, and insurance brokers grope hopelessly in their lack of understanding of the problems of medical practice. There is research here to challenge the best brains within our ranks. From among ourselves we must develop researchers who can produce results such that confidence will be inspired in our professional brethren for these medico-economists. We have specialized almost *ad nauseam* in other branches of medicine, but each feels competent to deal with his own and the public's economy in relation to medicine.

Nor will it do for us to regard this particular " specialty " as something beneath professional dignity. No man, however astute, brilliant, or assiduous, can ever comprehend the magnitude and intricacies of this problem unless he first be trained in the profession and have actual experience of its practice. I, personally, cannot deprecate sufficiently this ever-growing tendency of placing non-medical men in executive positions in our hospitals and medical societies. These are positions which should and must be filled from among our own ranks. Until it is done we can expect a continuance and extension of non-medical control over the profession, to the ever-deepening detriment of medical practice and patients alike. In short, the profession must recognize the full implications of responsibility and give leadership. Our problem permits of no alternative.

History of Insurance in Europe

It would be foolish to disregard all the years of accumulated experience of the European countries, as well as of sickness and accident insurance companies. There is something to be drawn even from lodge and industrial practice. Every research problem has its negative and positive values. Those of you who have done research will appreciate the value of the 90 per cent. negative results in any such problem. It is not sufficient to regard any negative result as being detrimental to the progress of the problem in hand. Because we may not like the National Health Insurance Act of Great Britain or State medicine as in Russia it does not mean that they have nothing to offer for our guidance. Because the Danish system may appeal to us it does not mean that we can transplant it to America and expect all its benefits to become immediately apparent. Every process is a growth, and every growth changes in direct proportion to its age, until such time as rigor mortis sets in. The best anyone can do is to eliminate, so far as possible, those factors which appear to give rise to decadence.

So it was that those of us in Ontario, when we started to think about this problem, began our researches by a study of every form of health insurance we could find. The three most fruitful sources were: (1) the National Health Insurance Act of Great Britain; (2) various other voluntary and industrial plans for both hospitalization and medical care on both sides of the Atlantic (in addition, the study by the Committee on the Cost of Medical Care from the American Medical Association also proved useful); and (3) somewhat later, after we had begun activities, we discovered that the Danish plan had much to offer to a democratic system.

This is neither the time nor the place to go into detailed discussion in regard to any of these systems or studies, but some broad principles may be stated. First, and most important, no plan ever came into existence in a finished and satisfactory form; all were found cumbersome and unsatisfactory in their initial stages. The National Health Insurance Act of Great Britain was instituted in 1912, and was a source of some difficulty and worry in its early stages. The Danish system was instituted in 1892 as a voluntary plan under the control of the profession. In twenty years 70 per cent. of the population came under the system, at which time the Government began to use coercion on the remaining 30 per cent. Both systems continue to grow and improve. The most important principle to grasp is that, although the British plan was Governmental and the Danish voluntary, each has been and continues to be a process of growth, each passing through an early stage of irritation requiring adjustment.

The second principle which becomes apparent is that no plan offers any degree of satisfaction until the profession establishes within itself such discipline as will permit of free choice of physician. It must, however, be noted that choice of physician presupposes a very real disciplinary control by organized medicine over its individual members. Liberty of choice cannot be permitted the public if a small percentage of the profession is permitted " licence " in charges and services rendered. The same discipline will be established in regard to the public when the profession has established the ability to control abuses. I shall endeavour later to illustrate how we have set up this control in Ontario.

The third great principle is that no plan ever becomes really successful until the profession recognizes its responsibility and assumes leadership. An attitude of critical indifference intensifies a sense of injustice among both the profession and the public, and leads to ever-increasing coercion by Governments over the profession. An attitude of helpful understanding leads to mutual co-operation. Nothing can, however, be attained by subservience on the part of the profession. Just as the patient awaits instructions from the physician of his confidence, so the public await the leadership of the profession.

A fourth and equally important fact becomes apparent from Government-controlled plans. Every such plan has started from a purely economic point of view. Lloyd George won his mandate from the British public in 1911 on the political battle-cry of " Ninepence for fourpence." In British Columbia the Government first set the economic mould of a little better than $5 per annum for an almost complete medical service. Such a basis for consideration is absurd.

It will become apparent in what manner these principles affect the establishment of a proposed plan in America as we unfold the actual steps taken in establishing Associated Medical Services Incorporated in Ontario.

(*To be concluded*)

Correspondence

State Control in Medicine

SIR,—You publish in the *Supplement* of December 2 (p. 231) a letter signed by the Presidents of the three Royal Colleges in which is given an assurance that there is no intention on the part of the Ministry of Health to use the present Emergency Medical Service as a step towards a post-war State Medical Service. Encouraging as this is to those of us who would regret such a step, the assurance is surely based on the assumption that this same Ministry and, indeed, this same Government will be in office when the war is over. Whatever may be the case we must keep before us the possibility that sooner or later a political group for the time being in power may yet seek to introduce a State Medical Service. That great hospitals can be moved out into the country—perhaps no bad thing either for patients or for teaching—and that members of their honorary staffs can abruptly forsake private practice for salaried appointments under the Ministry of Health are already proven. This present emergency may be the precedent for the establishment of a State Medical Service.

The letter further expresses the view that there is no reason to doubt but that the voluntary system will continue. One hopes that this does not necessarily imply that we should wish to go back to the voluntary system as we have known it. The negotiations recently concluded with the Ministry of Health bring into being a system of part-time employment for consultants, with freedom to continue private practice, which must commend itself to the majority of consultants. It is, moreover, a plan which would be eminently fair to them as a peace-time arrangement. It is a fundamental change which is, I believe, in accord with the policy of the British Medical Association, and there would appear to be no very good reason why we should ever go back to the idea of honorary service inherent in the voluntary system. It is not necessary here to recapitulate the traditional arguments in favour of the voluntary system, nor need one nowadays have to try to justify change. We need only remind ourselves that the voluntary hospitals no longer serve only the sick poor, that the difference between the poor and the well-to-do is less easily distinguishable these days, that the efficiency of the hospitals themselves has for years been impaired, and increasingly so, by serious financial embarrassment. By contrast we may readily acknowledge the remarkable efficiency of a subsidized hospital service such as that of the London County Council.

Full State control would be an evil thing in medicine, yet, so far as our hospitals are concerned, it is hardly to be avoided unless we ourselves can effect a complete change of attitude towards the system we have cherished up to the present time. To-day, I suppose, the mainstay of hospital finance is the contributory scheme; there are, in addition, the various financial trusts that have been created. With the levelling of the incomes of the people has come a change in the sources from which the voluntary hospitals derive theirs. Each seems to have its own contributory scheme, often competitive and overlapping, and the vast majority of people must belong to one or another. It would be but a short step to a single nation-wide system of individual contributions, allied perhaps to the national health insurance scheme and extended, in accordance with the Association's policy, to the dependants of insured persons and those of like economic status. Financially controlled by the State, given added stability by its aid, yet administered as now by boards of management, trustees, medical committees, or other bodies constituted for the purpose, such a scheme need in no way interfere with the prestige or dignity or individuality of our hospitals, would give fresh impetus to their work, and at the same time remove the spectre of a full State Medical Service.—I am, etc.,

Buntingford, Dec. 7. ALAN WIGFIELD.

Senior Students at First-aid Posts

SIR,—A number of senior medical students are on full time service at London hospitals which are converted into first-aid posts. They are employed under the Ministry of Health. In September the Ministry decided that these young men should not receive any pay for their services, but that they should be fed at Government expense. I understand that on January 1 this concession is to cease and that from that date these students are to provide their own board and lodging.

Weekly wages are being paid to first-aid men and stretcher-bearers who cannot be as skilled in their duties as the students. I consider that the least the Government can do is to provide these young men with board and lodging, and I suggest that the British Medical Association might use its influence on their behalf. We are all of us hard hit by present conditions, and many parents experience a difficulty in meeting the expenses of their sons' education.—I am, etc.,

Dec. 11. ONE OF THE MANY PARENTS.

SCHOOL HEALTH SERVICES

The circular issued by the Board of Education and Ministry of Health urging full resumption of the school health services throughout the country, and particularly an intensive effort to provide for supervision of the health of children in the evacuation areas, is to be welcomed. As the circular states, many of the children in the evacuation areas have been without supervision or medical care for over four months. It has been agreed between the Ministries of Health and Home Security that school medical officers and nurses, and school clinics and feeding centres which were taken over for civil defence purposes, shall, where possible, be wholly or partially released for the work of the school health service, provided that they are immediately available for casualties if the occasion should arise. They have also agreed that the staff and premises of first-aid posts not previously used by the school health services, and of bathing facilities provided for A.R.P., may be utilized for the children. In this way the Government hopes to make it possible for the million children left in the evacuation areas to be inspected, bathed, and, where necessary, treated within the next three months. These arrangements are to come into operation immediately without waiting for the schools to reopen, and should cover all children of school age in the evacuation areas. The survey will also cover the nutrition of the children, and, where necessary, authorities are urged to provide supplementary nourishment. A similar effort, the circular states, should be made in neutral areas where the schools have been closed pending the completion of air raid precautions, and local education authorities in reception areas should provide for evacuated children a school medical service of the same scope and standard as that provided for local children. The school medical service, which has been built up with much labour during the last thirty years, and forms a valuable part of the educational system of this country, must not, the circular concludes, be allowed to lapse because of the stress of war.

The Government has decided that, subject to suitable accommodation being available in the reception areas, further opportunities shall be provided for women who are approaching the end of their pregnancy to leave London. The L.C.C. is to act as the co-ordinating authority, and medical officers of health of metropolitan boroughs and others concerned have been asked to obtain particulars of all such women who wish to be evacuated. Adequate arrangements have been made in the reception areas for ante-natal attendance, and, so far as possible, confinements will take place in hospitals or maternity homes. After the lying-in period the mother will be billeted according to the arrangements made by the receiving authority.

Naval, Military, and Air Force Appointments

ROYAL NAVAL MEDICAL SERVICE

Surgeon Lieutenant-Commander W. R. S. Panckridge to be Surgeon Commander.

Surgeon Lieutenants P. K. Fraser, G. D. Wedd, W. A. S. Grant, and D. P. Gurd to be Surgeon Lieutenant-Commanders.

The seniorities of the following Surgeon Lieutenants have been ante-dated to the dates shown in parentheses: K. W. Donald, A. P. Kitchin, J. Dow, R. P. Phillips, and J. P. Corcoran (March 31, 1938); J. A. McLaren (April 2, 1938); E. M. Cochrane (May 1, 1938); C. J. W. Towers (June 1, 1938); T. J. Montgomerie (September 30, 1938).

ROYAL NAVAL VOLUNTEER RESERVE

Surgeon Lieutenant (Dental) A. B. Bateman, M.B., Ch.B., B.D.S., to be Surgeon Lieutenant-Commander (Dental).

Probationary Surgeon Lieutenants to be Surgeon Lieutenants with seniorities as indicated in parentheses: J. C. MacIntosh (October 7, 1938); H. de L. N. Davis (October 5, 1938); T. B. Snell and E. L. James (October 18, 1938).

Probationary Surgeon Lieutenants F. Bagot and A. L. Taylor to be Surgeon Lieutenants.

J. A. Chivers and J. R. H. Peat to be Surgeon Lieutenants.

To be Temporary Surgeon Lieutenants: R. Leishman, M. R. J. Behrendt, W. H. H. Jebb, C. R. G Howard, H. P. Watson, R. I. C. Bradford, J. T. McCutcheon, E. J. Yates, R. Rhydwen, A. C. Shelford, J. Cuthbert, C. C. Jeffery, H. M. Dixon, G. N. Davison, R. P. Coldrey, D. K. Black, M. A. Carpenter, A. P. Robertson, T. M. Adnams, O. J. Curl, J. Baxter, A. G. Hegarty, E. H. Minors, E. W. Rees, D. N. B. Morgan, and M. J. Freeman.

ROYAL AIR FORCE VOLUNTEER RESERVE: MEDICAL BRANCH

J. Tate to be Flight Lieutenant for the duration of hostilities.

The following to be Flying Officers for the duration of hostilities: G. L. Gryspeerdt, A. A. Butler, J. D. Ebsworth, W. Foskett, M.C., G. Hutchison, J. G. M. McMurchy, K. W. Monks, C. G. Rob, A. J. Smith, W. F. Walton, D. Wilson, and D. St. C. L. Henderson.

REGULAR ARMY RESERVE OF OFFICERS

ROYAL ARMY MEDICAL CORPS

Captain H. S. Griffith has ceased to belong to the Reserve of Officers on account of ill-health.

Lieutenant D. F. Lawson, from Dorset Regiment, to be Lieutenant, with seniority January 29, 1926.

SUPPLEMENTARY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS

Lieutenant W. Shirkey has ceased to belong to the Supplementary Reserve of Officers on account of ill-health.

TERRITORIAL ARMY

ROYAL ARMY MEDICAL CORPS

Sir John Jarvis, M.P., to be Honorary Colonel, R.A.M.C.

Lieutenant-Colonel J. M. Chrystie, having attained the age limit, has retired and retained his rank, with permission to wear the prescribed uniform.

Captain R. Okell has relinquished his commission on account of ill-health.

Lieutenant P. Gibbin has relinquished his commission on account of ill-health

LAND FORCES: EMERGENCY COMMISSIONS

ROYAL ARMY MEDICAL CORPS

L. Colebrook to be Lieutenant and promoted to the rank of Acting Colonel.

Lieutenant C. F. C. White has relinquished his commission on account of ill-health.

To be Lieutenants: R. D. I. Beggs, W. S. Nutt, A. S. Gordon, W. Dawson, G. I. Scott, A. I. C. Eland, A. Brooks, S. J. Hepworth, P. G. Scott, W. J. N. Brandon, J. I. Rice, C. F. Murison, S. R. Sinclair, A. W. Frankland, E. K. Morris, G. Gregg, E. G. Morris, J. R. Sweeting, E. T. Gilbert, K. C. Crosbie, P. A. Ashcroft, W. C. Harris, D. P. Lewis-Badgett, J. B. Bamford, E. W. Duncan, M. Herman, D. D. Keall, R. McK. Martin, A. C. Turner, J. M. Stobo, L. R. Coke, W. T. Macdonald, W. H. S. McGregor, R. H. Richardson, D. G. Sheffield, R. F. Tredre, A. de M. Severne, L. L. Ratazzi.

The surname of W. Allan is as now described and not as notified in the *London Gazette* of November 17.

To be Medical Officers with the relative rank of Lieutenant: Agnes W. Black, Doris K. Small, and Hilary S. M. Hadaway.

COLONIAL MEDICAL SERVICE

The following appointments are announced: D. A. Cannon, M.B., Ch.B., D.T.M. and H., Medical Officer, Nigeria; I. H. Marrable, M.R.C.S., L.R.C.P., and F. E. Stock, F.R.C.S., Medical Officers, West Africa; D. C. M. Macpherson, M.B., Ch.B., D.T.M., Assistant Director of Medical Services, Fiji; J. MacQueen, M.D., D.P.H., Deputy Director of Medical Services, Palestine; H. S. Townsend, M.B., D.T.M. and H., Senior Health Officer, Gold Coast.

In a circular to local education authorities the Board of Education urges the resumption as soon as possible of conservative dentistry among school children. It points out that while it was necessary in many areas to suspend this work for a period following evacuation in September, much of the work done in recent years will be wasted if that period is prolonged unduly. The circular also contains advice on, among other things, transfer of dental staff from evacuation to reception areas, emergency treatment, anaesthetics, and fees for treatment.

B.M.A.: Meetings of Branches and Divisions

BIRMINGHAM BRANCH: WEST BROMWICH AND SMETHWICK DIVISION

At the annual meeting of the West Bromwich and Smethwick Division, held on October 29, the CHAIRMAN reported on the work of the Division during the past year and explained that the ordinary work had largely given way to preparations for emergency. The protection of practices scheme had been established and was operating satisfactorily, although only to a limited extent as yet. During the year one film had been shown—namely, "The Functional Treatment of Fractures"—and Dr. F. I. Dawson (Droitwich) read a paper on hydrological methods.

The following officers were elected for 1940:

Chairman, Dr. D. Saklatvala. *Deputy Chairman*, Dr. A. Wilson. *Honorary Secretary*, Dr. J. M. Mitchell. *Representative in Representative Body*, Dr. W. H. Shilvock.

Diary of B.M.A. Central Meetings

DECEMBER

29 Fri. Journal Board, 11.45 a.m.

Postgraduate News

The Fellowship of Medicine announces the following courses of instruction for Final F.R.C.S. candidates: (1) surgical tutorial classes, twice weekly, 4.30 p.m., continuing until January 25, 1940, at the Medical Society of London, 11, Chandos Street, W. There will be no lectures during Christmas week, but they will be resumed on January 2; (2) a comprehensive course at the Royal Cancer Hospital, daily at 9.30 a.m. until 1 p.m., continuing until January 27, 1940; (3) short courses in pathology will be given in January, each course consisting of two demonstrations (in the same week) from 2 p.m. to 3.30 p.m., and each course limited to six postgraduates; (4) an evening course at St. Mary's Hospital on Tuesdays, Wednesdays, and Thursdays, at 8 p.m., continuing until January 25, 1940 (excluding Christmas week), and consisting of tutorial classes on Tuesdays and Thursdays and a clinical class on Wednesdays; (5) an operative surgery course at the Royal Cancer Hospital, at 2 p.m., January 1 to 27, 1940 (strictly limited); (6) an orthopaedic course at the Royal National Orthopaedic Hospital, Stanmore, Fridays, at 2 p.m., December 29, 1939, to January 26, 1940 (strictly limited).

Lectures and practical courses of instruction for a diploma in psychological medicine will open at the Maudsley Hospital on January 2, 1940. Part I of the course will include twelve lectures on the physiology of the nervous system by Professor S. Nevin; four lectures on physiological psychology by Dr. F. Golla; four lectures on biochemistry in relation to the nervous system by Dr. S. A. Mann; eight lectures on the anatomy of the nervous system by Professor Le Gros Clark, F.R.S., and practical instruction and demonstrations by Dr. Alfred Meyer; twelve lectures on psychology by Dr. J. M. Blackburn; ten lectures on medical psychology by Dr. Aubrey Lewis; and three lectures on the practical application of intelligence tests by Dr. C. J. C. Earl. Part II will include twenty clinical tutorial classes by Professor S. Nevin; and, from March to May inclusive, eight lectures on symptomatology by Dr. Aubrey Lewis; eight lectures on causation and on genetics as applied to psychiatry by Dr. Eliot Slater; six lectures on general treatment, excluding psychological methods, by Dr. T. Tennent; eight lectures on psychopathology and the principles of psychotherapy by Dr. Bernard Hart; clinical demonstrations (1) on the organic psychoses by Professor Edward Mapother, (2) on the functional psychoses by Dr. Louis Minski, (3) on the psychoneuroses by Dr. W. S. Maclay; four lectures on the mental abnormalities of children by Dr. Mildred Creak; six lectures on mental deficiency by Dr. A. F. Tredgold; four lectures on the legal relationships of insanity by Sir Hubert Bond; six lectures on crime and insanity by Dr. W. Norwood East; three lectures and demonstrations on laboratory methods, including the examination of the blood and cerebrospinal fluid; and six lectures and demonstrations on pathology of the central nervous system by Dr. Alfred Meyer. The fee for the whole course, Parts I and II, is £15 15s.; for Part I or Part II separately, £10 10s.; for single series of lectures in Part I, £4 4s., or in Part II, £2 2s.; for the course in neurology, £4 4s.; for single series of demonstrations, £1 1s.; special May course, £5 5s. Inquiries should be addressed to Professor S. Nevin, Honorary Director of the Medical School, Central Pathological Laboratory, West Park Hospital, Epsom, Surrey.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this heading is 9s. This amount should be forwarded with the notice, authenticated by the name and address of the sender, and should reach the Advertisement Manager not later than the first post Tuesday morning to ensure insertion in the current issue

BIRTH

PRESTON.—On December 15, 1939, at Eastbourne, to Margaret, wife of Lieut.-Colonel T. W. Preston, M.D., R.A.M.C., a son.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 30 1939

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WAR NOTICE

Closing Date of Protection of Practices Schemes in Greater London

At a joint meeting of the Local Emergency Committees for London, Middlesex, South-West Essex, and Stratford, held on November 2, 1939, it was decided that no practitioners should be admitted to the Protection of Practices Schemes in the areas mentioned after December 31, 1939, except at the discretion of the Local Emergency Committee concerned. A period of grace of fifteen days has, however, been allowed, and the final date of closing will be January 15, 1940.

CENTRAL MEDICAL WAR COMMITTEE,
British Medical Association House,
Tavistock Square, W.C.1.

MEDICAL TREATMENT BY CIVILIAN DOCTORS OF MEN SERVING WITH THE FORCES

The following letter has been sent by the Ministry of Health to Clerks to Insurance Committees:

"1. A number of inquiries have been received from insurance committees on behalf of doctors on their medical lists as to the circumstances in which soldiers (including women members, other than officers, of the Auxiliary Territorial Service or Voluntary Aid Detachments) may call in the services of a civilian doctor at the cost of the funds of the War Office, and as to the steps the doctor should take to obtain payment. The Minister has been in communication with the War Office on the subject and is in a position to give the following information.

"2. For the purpose of this letter soldiers, etc., may be divided into three groups:

(*a*) Soldiers quartered in barracks or camps.
(*b*) Soldiers on leave or furlough.
(*c*) Soldiers who whilst training reside at home or in billets.

"3. No occasion will arise for soldiers in group (*a*) to apply to a civilian doctor for treatment, as a medical officer of the Army Medical Corps will be stationed at the barracks or camp.

"4. As regards group (*b*), when a soldier proceeds on leave or furlough he is supplied with a pass which instructs him, should he require medical aid, to apply at the nearest military hospital whenever practicable. In the event of the soldier living more than two miles from the military hospital, or his condition being such that he is unable to travel to the hospital, he may, at the cost of the funds of the War Office, call in a civilian doctor. The rates allowed for attendance are given on the pass which the soldier is instructed to show to the doctor.

"5. Soldiers who whilst training reside at home or in billets should apply, if they need medical aid, to the medical officer attached to their unit. In emergencies where the medical officer attached to the unit or military hospital is not available the soldier may call in a civilian doctor.

"6. To obtain payment from the War Office a civilian doctor must procure and fill in Army Form O.1667. The form must be sent on the conclusion of treatment to the Deputy or Assistant Director of Medical Services of the Command. . . . The claim may be sent to the Deputy or Assistant Director by the doctor either direct or through the Insurance Committee or Panel Committee if, as is assumed, both those committees will be prepared to undertake the collection and transmission of the claims.

"7. The Minister would be glad if the Insurance Committee would communicate at an early date with the Panel Committee with a view to the information . . . being made known to them and to practitioners on the insurance medical list. . . . A supply of Army Form O.1667 will be forwarded by the Minister to the Insurance Committee or Panel Committee on application, in order that they may deal with applications made to them by doctors who require the form in order to submit a claim.

"8. It will be appreciated that where a soldier applies to a civilian doctor for treatment in circumstances where he should clearly have had recourse to military arrangements the War Office cannot accept responsibility for payment.

"9. In the case of the Royal Air Force and Women's Auxiliary Air Force the general conditions set out above for Army personnel apply. Airmen or airwomen who have received medical attention from a civilian medical practitioner are required to report the fact immediately to their Commanding Officer and forward to him the doctor's certificate. The Commanding Officer will then furnish the doctor with a copy of Form O.1667. This form should be completed by the doctor and returned to the officer from whom it was received, who will then arrange for payment. All relevant information concerning fees, etc., is shown on the reverse of the Royal Air Force Leave Form which airmen (and airwomen) are required to show to the doctor and on Form O.1667.

"10. Men serving with the Royal Navy (including women members, other than officers, of the Women's Royal Naval Service and Voluntary Aid Detachments) can, when on leave from their ship (or depot), obtain treatment from a local civilian doctor, and when doing so should obtain a preliminary medical certificate from the doctor and send it to the Commanding Officer of their ship (or depot), who will furnish the doctor with the necessary Form (S.26) for claiming payment. It is clearly indicated in the form to whom the completed claim should be sent.

"11. It is not anticipated that the assistance of the Insurance and Panel Committees will be needed in connexion with the collection of claims for the treatment of men and women in the Royal Navy and Royal Air Force."

A copy of Army Form O.1667 has been sent with the letter. One side of this form is headed "Civilian Medical Practitioner's Bill," and provides for a statement of the patient's name and rank, nature of his illness, distance from practitioner's to patient's residence, distance from patient's residence to nearest military hospital, and whether the patient was visited or attended at the surgery. It also provides forms of certificate to be signed by the civilian practitioner, the Commanding Officer, and the Deputy or Assistant Director of Medical Services of the Command. The instructions on the reverse of the form contain the following scale of charges, and a concluding note states that the cost of medicine necessary for treatment is included in these charges:

Scale of Charges applicable for Visits made on or after September 1, 1939

1st— VISIT AND MEDICINE

Column 1	2	3	4
	Visit to surgery	If not more than 2 miles away	Greater distances
Day	s. d. 3 0	s. d. 4 6	An addition of 6d. for each additional mile or part of a mile, with a limit of £1 per visit.
Night .. .. 22.00 to 07.00	—	6 0	An addition of 6d. for each additional mile or part of a mile, with a limit of £1 for ordinary visits. In very exceptional circumstances the {G.O.C. / A.O.C.} may, if he considers the fee admissible on this basis inadequate, refer the case to the {War Office / Air Ministry}, when payment at a higher rate will be considered. He should furnish full particulars, including time of night, duration of the visit, and nature of the case.

The "Distance Fee" is payable in one direction only, and is payable in respect only of the first case visited, when more than one patient is attended in the neighbourhood on the same occasion. The fee shown in column 3 will be allowable for each patient after the first, subject to the maximum limit of £1 17s. 6d. a day for all services.

2nd—Charges for surgical appliances, when necessary, will be allowed by the {War Office / Air Ministry} according to circumstances.

3rd—Minor surgical operations (including revaccination): Each case, 2s. 6d.

4th—For other operations, and for special cases, remuneration as fixed by the {War Office / Air Ministry} will be allowed according to circumstances and nature of case.

IMPLICATIONS OF HEALTH INSURANCE IN AMERICA

BY

J. A. HANNAH, M.D.

Managing Director, Associated Medical Services Incorporated, Toronto

The following is the second and concluding part of Dr. Hannah's article. The first appeared last week at page 245.

In approaching this problem it would appear that there are three main methods by which we may achieve our goal: (1) by legislation; (2) as an ordinary business project; and (3) through co-operation of all interested parties.

A legislative Act is the written, considered opinion of the party in power in regard to any particular problem. The Act may be conceived and drafted with every good intention and may contain what appears at the moment to be the best arrangement and regulations possible. Having set its opinion in writing no political body can afford to change that opinion with any degree of alacrity, even if it were possible to convince sufficient members. In addition, it would appear that there can be no gradual period of development in either growth or experience. Up to the moment such an Act becomes effective there would be no insured; immediately following its effective date there may be hundreds of thousands or even millions under its administration. Try as we will, satisfactory provision cannot be made for its administration. Inexperience will give rise to mistakes, and mistakes on the scale of hundreds of thousands and millions are costly.

Again, who among the profession or the public cares what the Act is or stipulates during a period of illness—the patient must be served and the Act be hanged. The very inelasticity of well-intentioned Acts renders them impractical in regard to medical practice except in so far as they are purely enabling. The inherent dangers of political control have been all too manifest in the mental hospitals in both the U.S.A. and Canada to need further comment here.

The second approach is through the usual channels of business. Business methods and economic laws must be observed, except that the experience of sickness and accident insurance companies has shown that the profit motive destroys the effectiveness of this form of insurance and fails to meet the needs of illness. Any portion of illness which is not profitable to the insuree is either not covered or is excluded from the policy at the first opportunity. The profit motive has stipulated that the male wage-earner can be insured at half the cost of the female earner. The male adult in the family is profitable and therefore can be insured. The wife and children are not profitable, therefore they cannot be covered.

Illness has no regard for persons: male or female, young or old, healthy or unhealthy, rich or poor. Therefore, the profession can have no truck or trade with any plan which does not aim at meeting the cost of illness as we find it in the family units, without regard to whether there is profit to any shareholder. We have, however, a very vital interest in how such services can be paid. Therefore, it becomes imperative that we observe the law of supply and demand. Let us not, however, be deceived. No amount of Government patronage out of taxation can remove any portion of the cost to the public or meet the public's responsibility, except in so far as it meets its fair share of the cost of the indigent or the near-indigent.

Co-operation

Realizing these factors, and in the light of the foregoing studies, the medical profession in the province of Ontario set about the development of our answer to this problem. From here on we shall deal with the formation, organization, and growth of Associated Medical Services Incorporated in Ontario.

In 1930 I became a member of the Ontario Civil Service Association. Shortly afterwards the association became interested in some form of health protection for its members. Consideration was given to hiring a staff of physicians and making a contract with some hospital to give service. This, however, did not appear to me to provide the type of service desired, and so I was appointed to a committee to report back with a plan which might prove to the liking of both the civil servants and the medical profession. This was done at the annual meeting in 1933. The committee was given an appropriation and continued its studies, most of which have already been given.

At the annual meeting in 1934 the association gave its approval to the plan which later developed into Associated Medical Services. Among other principles laid down were: (1) that the choice of physician was desirable; (2) that the medical profession should control the method of practice; and (3) that we should accept the Ontario Medical Association's schedule of fees as being fair and proper. Such proposals naturally presuppose the co-operation of the profession, and so it fell to my lot to approach the Academy of Medicine in Toronto, of which I had been a member for some years. The Academy preferred to refer the matter to its parent body, the Ontario Medical Association, and this was done at its annual meeting in 1936.

Now it is of interest that the Ontario Medical Association had been studying the problem of compulsory health insurance under the able chairmanship of Dr. W. S. Caldwell. A resolution was passed favouring the principle of a voluntary plan and a committee set up to study the institution of trial areas in the province. On January 14, 1937, the insurance committee delegated authority to five of its members to: (1) Draft a constitution and by-laws. (2) Place these before the Board of Directors of the Ontario Medical Association. (3) Ascertain the cost of instituting the plan. (4) Obtain the necessary finances. (5) Take out a charter and go into operation.

Ten days before February 23, 1937, the executive bodies of the Ontario Medical Association had the constitution and by-laws in their hands, and at their meeting on that date they not only approved of the setting up of the plan but gave an initial grant of $5,000 for the institution of the plans. It is of interest to note that unanimity did not prevail. The profession in the city of Windsor insisted that the plan should be started on a group industrial basis, whereas Toronto was prepared to start with single individuals. It is of further interest that Windsor has not gone into operation yet,[*] while Toronto has 6,000 subscribers, and branches in Ottawa, Oshawa, Hamilton, and Woodstock.[†] Out of the $5,000, Windsor got $1,200, which latter sum was advanced by the Civil Service Association. It is to be noted that $5,000 constitutes the total amount of money advanced for organization outside which all our expenses, administrative and medical, have been met from income.

Following this degree of approval the Civil Service Association decided to cast in its lot with the province-wide plan, and a charter was secured from the Ontario Government on April 9, 1937, under the name of Associated Medical Services Incorporated. On June 1, 1937, we opened our offices at 11, Queen's Park, Toronto, in space granted rent-free by the Government. At the close of 1937, after seven months' operation, we had secured 733 subscribers and were paying most of our overhead, as well as showing a surplus of $1,722 on our medical reserve account.

During 1938 our subscribers rose to 4,020—five and a half times the number with which we ended 1937. At the same time our reserve increased almost eight times, leaving sufficient funds to carry our previous experience for three months without income, if necessary. We closed the year with a surplus of $160 in our administrative account and $11,000 dollars in our medical reserve account. Since December 31, 1938, we have had 2,500, or 60 per cent., increase in subscribers.[‡] Both medical and administrative reserves are showing healthy increases.

Scope and Terms of the Service

You will no doubt be interested in knowing the services we give, the subscription we collect, and the schedule of fees we allow our participating physicians. The following are extracts from our regulations:

> The Corporation shall provide to the subscriber the following benefits upon the terms and under the conditions as set forth in the regulations. The benefits to the subscriber shall be limited to services and treatment to be provided by a participating physician in any branch area, provided that the Corporation will in their discretion defray the whole or any portion of the expenses incurred in the treatment of the subscriber outside such branch area.

1.—*Medical benefits:*

Medical benefits shall be deemed to include:

(*a*) All medical attention necessary for diagnosis and treatment of illness, whether in the home, office, or hospital, including accidents. Obstetrics shall also be included provided that the obstetrical patient's husband must also be a subscriber and both must have been subscribers for ten consecutive months before delivery.

The cost of hospital care at the rate of $1.00 a day will be provided for the child up to 14 days after birth, after which time application may be made to include the child as a dependant in accordance with the regulations.

(*b*) Such *x*-ray services as shall be deemed necessary for the proper diagnosis and treatment of the subscriber.

(*c*) The cost of anaesthetics and their administration.

2.—*Surgical benefits:*

Surgical benefits shall be deemed to include:

All procedures and practices usually considered within the scope of a competent surgeon, but shall not include the treatment of conditions not detrimental to bodily health or interfering with function.

3.—*Consultant service:*

A consultant may be called through the Branch Medical Officer, either at the request of the participating physician or the subscriber.

4.—*Hospital benefits:*

Hospital benefits shall be deemed to include:

(*a*) Available semi-private accommodation in a hospital approved by the Corporation, the cost of which does not exceed $3.50 per day.

(*b*) Cost of anaesthetics and operating room.

(*c*) Such medicines as shall be required while in hospital not to exceed the sum of fifty cents (50 c.) per day.

5.—*Nursing benefits:*

Nursing benefits shall be deemed to include such nursing as shall be deemed necessary by the Branch Medical Officer.

6.—*Sanction for service:*

Where the services required are such as are not usually supplied by a general practitioner the approval of the Branch Medical Officer is required. For example: Consultations, major surgery, technical diagnostic procedures, *x*-ray, hospitalization, nursing care, etc.

7.—*Total amount of service paid for:*

The Corporation shall be liable for the expense of service under this contract to a sum not exceeding eight hundred dollars ($800.00) in any consecutive twelve-month period and for each subscriber or dependant.

Services excluded:

(1) The Corporation shall not be responsible for the care of, or any expense in connexion with the care of, institutionalized epilepsy, institutionalized mental diseases, institutionalized feeble-mindedness, institutionalized tuberculosis, nor for venereal diseases nor any disease or injury arising from any accident covered by the Workmen's Compensation Act, nor for the care of any subscriber suffering from any disease or injury arising from any condition for the expenses of which the Ontario or Dominion Government or any other body is responsible.

(2) The Corporation shall not be responsible for any expense incurred by reason of any condition which existed at the date of application of the subscriber.

Family group rates of subscription:

In order to maintain the family group rate all members of the immediate family must make application to become subscribers. If the Corporation declines one or more applications from the group the family rate shall still apply, provided all of the accepted members of the family remain subscribers.

The subscriber shall pay or cause to be paid on his behalf to the Corporation in advance monthly subscriptions on the following scale:

For the subscriber	$2.00 per month
For the first dependant of the subscriber	1.75 per month
For the second dependant of the subscriber	1.50 per month
For the third dependant of the subscriber	1.25 per month
For the fourth and each additional dependant of the subscriber	1.00 per month

Individual subscription rate:

The individual rate of subscription shall be $2.00 per month per subscriber and shall be the rate in all cases where the family group rate does not apply.

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[*] Windsor Medical Services, Incorporated, announced the inauguration of its plan on July 8, 1939.

[†] Since the date of writing we have grown to 9,000 subscribers. In addition we have passed through the recent epidemic of influenza and at the same time a particularly heavy epidemic of measles, despite which we show a reasonable increase in our medical reserve.

[‡] Since December 31, 1938, to date of writing (August 11, 1939) we have had an increase of 4,815 subscribers.

Waiting period:

> The subscriber shall be entitled to benefits herein provided from the date set forth upon his identification card (Form No. 5), which shall be two months from the first day of the month nearest the date of his application.*

Schedule of fees:

> The schedule of fees allowed shall be that designated by the Ontario Medical Association and in force at the time the service is rendered.

In arriving at a basis of service and its cost we have considered it best to set out the services required by an individual in one year† and set against them the cost on the basis of the minimum schedule of fees as given in the tariff of the Ontario Medical Association. This appears as follows:

Home calls—1 per person per year	$3.00
Office calls—1.5 per person per year at $2.00 ..	3.00
Surgical operations—0.08 per person per year at $50.00	4.00
Consultations and specialist cost per person per year	4.00
X-ray and laboratory work	1.00
Hospitalization—1.3 days at $3.50	4.50
Nursing—0.5 day at $5.00 per day	2.50
Administration	2.00
Total	$24.00

These services cover obstetrical and surgical attention under controlled conditions, and the cost totals $24.00 per person per year in the individual situation. Because of the reduced incidence of service required in the family situation the cost drops twenty-five cents for each dependant to a minimum of $1.00 per person. In the average family of four this costs $6.50 per month, or $5\frac{12}{32}$ c. per day per person. This is less than is spent annually by such average family on tobacco, cosmetics, or other luxuries.

Personally I am a firm believer in democracy, and to me democracy means not only personal liberty but also personal responsibility. Every time we shirk our personal responsibility by handing it over to Governments, just so often do we dole out a corresponding portion of personal liberty. I believe we can answer the problem better in our own way through an evolution of gradual growth; raising a structure flexible to our needs, growing into the shape and moulded to the need of medical service; carrying with us all that is good out of the past; disregarding useless and dead wood; and adhering ever and always to the most sacred of all, the Hippocratic Oath.

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* To this has been added: "except in the case of the removal of tonsils and/or adenoids, in which case the waiting period shall be twelve months from the date of application."

† The figures for service are the result of wide study and research over a period of four years and are drawn from sources too numerous to list.

Naval, Military, and Air Force Appointments

ROYAL ARMY MEDICAL CORPS

The appointments of Lieutenants F. B Bagshaw and H. I. A. Richards have been antedated to November 4 and 5, 1937, respectively, under the provisions of Article 36, Royal Warrant for Pay and Promotion, 1931, but not to carry pay and allowances prior to November 1, 1938. (Substituted for the notification in the *London Gazette* of November 28.)

The temporary commission of Lieutenant J. McN. Campbell has terminated.

ROYAL AIR FORCE MEDICAL SERVICE

Flying Officers to be Flight Lieutenants, with seniorities indicated in parentheses: J. E. Furness and R. V. Wright (September 12, 1938); I. Shaw (November 7, 1938).

Flying Officers D. Macdonald and F. D. Campbell to be Flight Lieutenants.

AUXILIARY AIR FORCE: MEDICAL BRANCH

Flying Officer W. W. Walker to be Flight Lieutenant.

T. G. Davies and C O. Hudson to be Flying Officers.

ROYAL AIR FORCE VOLUNTEER RESERVE: MEDICAL BRANCH

M. Pearson has been granted a commission as Flight Lieutenant for the duration of hostilities. (Substituted for the notification in the *London Gazette* of December 5.)

To be Flying Officers for the duration of hostilities: J. T. Burrowes and T. V. Mendlesohn.

TERRITORIAL ARMY

ROYAL ARMY MEDICAL CORPS

Major G. G. Marshall has relinquished his commission on account of ill-health

Major J. A. Bruce, from Territorial Army, Royal Artillery, to be Major, with seniority July 15, 1937.

Lieutenant D. Arnott, from Territorial Army Reserve of Officers, General List, Royal Artillery, to be Lieutenant.

TERRITORIAL ARMY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS

Captain A. C. Frazer, from Active List, to be Captain.

LAND FORCES: EMERGENCY COMMISSIONS

To be Lieutenants: F. L. Cane, J. A. Finegan, R. Paul, J. L. Chisnall, D. J. Cusiter, D. G. C. Whyte, J. A. Sinclair, D. W. F. Gotla, G. N. Barker, R. T. Wordingham, D. W. Benyon, H. D. E. Whitman, E. G. Holmes, W. S. Brindle, A. Amdor, B. W. Thompson, M. C. Fulton, S. Widman, F. B. Akeroyd, G. W. Blenkinsop, G. Wilson, R. J. House, H. A. Gibb, A. Bickford, G. A. H. Adam, W. J. C. Auld, J. T. Boyd, G. B. Carter, S. R. E. Davies, J. L. M. Jeffares, J. S. Jeffrey, T. G. Martin, R. G. Miller, R. Traill, A. F. Turner, F. H. Taylor, A. J. Leslie-Spinks, T. H. Bassett, W. Brown, D. E. Rodger, R. E. S. Dalliwall, W. E. M. Mitchell, M.C., B. Geneen, T. Lynch, G. Struthers, J. McD. S. Slater, G. H. Smith, J. N. Barber, N. R. Hill, and C. F. Morrison.

Fanny Pollecoff and Anna R. Glover to be Medical Officers with the relative rank of Lieutenant.

INDIAN MEDICAL SERVICE

The Secretary of State for India has appointed to the Civil Branch of the Indian Medical Service the following officers of the Indian Medical Service, with effect from the dates indicated in parentheses: *Central Government:* Captain C. J. Hassett (January 3, 1939); Major G. Milne (January 18, 1939); Major J. H. Gorman (February 6, 1939); Captain H. W. G. Staunton (March 28, 1939); Captain T. Sommerville (May 30, 1939). *Madras:* Captain S. Shone (January 17, 1939). *United Provinces:* Captain A. B. Guild (January 14, 1939); Captain T. F. O'Donnel (April 6, 1939). *Punjab:* Captain D. W. Taylor (June 1, 1939). *Bihar and Orissa (Joint Cadre):* Captain A. D. Andreasen (April 30, 1939); Captain J. D. Murdoch (May 9, 1939)

Lieutenant-Colonel R. F. D. MacGregor, C.I.E., M.C., has been advanced to the List of Special Selected Lieutenant-Colonels.

Postgraduate News

The Fellowship of Medicine announces the following courses of instruction for Final F.R.C.S. candidates: (1) surgical tutorial classes twice weekly, 4.30 p.m., continuing until January 25, 1940, at the Medical Society of London, 11, Chandos Street, W. The lectures for this week are on diseases of bones by Mr. R. J. McNeill Love on January 2, and on injuries to bones by Mr. A. M. A. Moore, January 3; (2) a comprehensive course at the Royal Cancer Hospital, daily from 9.30 a.m. to 1 p.m., continuing until January 27, 1940; (3) short courses in pathology, each course consisting of two demonstrations (in the same week) from 2 p.m. to 3.30 p.m., and each course limited to six postgraduates; (4) a course at St. Mary's Hospital, Tuesdays, Wednesdays, and Thursdays, at 8 p.m., continuing until January 25; (5) an operative surgery course at the Royal Cancer Hospital at 2 p.m., January 1 to 27; (6) an orthopaedic course at Royal National Orthopaedic Hospital, Brockley Hill, Stanmore, Fridays, at 2 p.m., until January 27.

WEEKLY POSTGRADUATE DIARY

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.—*St. Mary's Hospital*, Paddington, W.—Tues., Wed., and Thurs., 8 p.m., Final F.R.C.S. Clinical and Tutorial Course. *Royal Cancer Hospital*, Fulham Road, S.W.—Daily, 9.30 a.m. to 1 p.m., Comprehensive Final F.R.C.S. Course. Mon., Thurs., and Fri., Operative Surgery Course. *Medical Society of London*, 11, Chandos Street, W.—Surgical Tutorial Classes, Tues., 4.30 p.m., Mr. R. J. McNeill Love, Diseases of Bones; Wed., 4.30 p.m., Mr. A. M. A. Moore, Injuries to Bones. *Royal National Orthopaedic Hospital*, Brockley Hill, Stanmore.—Fri., 2 p.m., Orthopaedic Course.

VACANCIES

EXAMINING FACTORY SURGEON.—The appointment at Lincoln is vacant. Applications to the Chief Inspector of Factories, Home Office, Whitehall, S.W.1, by January 10, 1940.

Diary of B.M.A. Central Meetings

DECEMBER

29 Fri. Journal Board, 11.45 a.m.

BIRTHS, MARRIAGES, AND DEATHS

The charge for inserting announcements under this heading is 9s This amount should be forwarded with the notice, authenticated by the name and address of the sender, and should reach the Advertisement Manager not later than the first post Tuesday morning to ensure insertion in the current issue

BIRTHS

KANAAR.—On December 2, at High Salvington, Sussex, the wife of Lieutenant A. C Kanaar, R.A.M.C.—a son.

PARFIT.—On December 20, at the West China Union University, Chengtu, Szechuan, to Jessie (*née* Browne), M.D., and Norman Parfit, B.M., B.Ch., D.P.H.—a daughter.

BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 7 1939

INTRACRANIAL CAUSES OF HEADACHE *

BY

HENRY COHEN, M.D., F.R.C.P.

Professor of Medicine, University of Liverpool; Honorary Physician, Royal Infirmary, Liverpool, etc.

Causes of Head Pains

The causes of pains in the head are customarily, and for diagnostic purposes conveniently, grouped on an essentially anatomical basis:

1. *Intracranial*—namely, diseases of the brain and meninges.
2. *Cranial*—namely, diseases of the skull bones and the enclosed air sinuses.
3. *Extracranial*—namely, diseases of the scalp. For example, fibromyositis of the occipito-frontalis muscle or its aponeurosis: trigeminal, spheno-palatine (Sluder's), and occipital neuralgias; herpes supra-orbitalis; temporal arteritis, etc.
4. *Reflex*, from diseases of the eyes, teeth, and nose, though nasal causes might produce their effect through the air sinuses —for example, by inflammatory changes spreading to them or the production of so-called "vacuum" headache.
5. *Toxic*: the source being (*a*) exogenous—for example, alcohol, tobacco, lead, poisonous fumes, CO_2, etc.; or (*b*) endogenous—for example, uraemia, constipation, fevers.
6. *Migraine*: an incomplete diagnosis signifying a syndrome —that is, a constantly recurring group of symptoms—which is the clinical expression of a disturbed mechanism common to many pathological states. It merits a separate category because the syndrome itself is significant even when the exciting cause remains unmasked (cf. epilepsy).
7. *Psychogenic*—occurring in psychoneuroses, psychoses, and exhaustion states.

This paper is concerned chiefly with the first and sixth groups. Let me stress at the outset that headache is a symptom unaccompanied by specific physical signs capable of quantitative assessment. Hence in any given case in which headache is the presenting symptom we are dependent on the patient's descriptive powers for a knowledge of: (1) its *site and duration*, which are often vague, especially in retrospect; (2) its *character*, including its quality; its mode of onset and decline; whether it is constant, intermittent, or subject to paroxysmal exacerbations; the circumstances which aggravate or alleviate it—an accurate description of which often defeats the verbal resources of even the more intelligent of patients; and (3) its *intensity*, which varies not only with the severity and rate of development of the cause but also with the patient's threshold for pain—the same noxious stimulus in one patient producing "slight headache," in another "excruciating pain." Hence the patient's account of headache may be of little diagnostic value, and it is not surprising that a recent annotation in the *British Medical Journal* (May 6, 1939, p. 929) should speak of headache as "a symptom which has for long been one of the commonest, most unintelligible, and most intractable with which the practitioner has to deal." While it is true that few human beings can claim never to have suffered from headache, recent advances in therapeutics, both medical and surgical, have rendered many types more amenable to treatment, and recent observations, both experimental and clinical, have thrown considerable light on the mechanism of production of headache. This knowledge is of fundamental importance for a proper understanding of the problem under discussion. It is to-day beyond reasonable doubt, for example, that the mechanism of cardiac pain is the same—myocardial anoxia—whether the pathological cause be coronary thrombosis, angina of effort, myocardial fibrosis, or profound anaemia. If it could be demonstrated that the mechanisms of headache were similar, whether brought into play by a systemic disturbance such as fever, or local intracranial lesions such as injury, inflammation, tumours, etc., we should then be led to the significant conclusion that there is no type of headache which is of itself pathognomonic of an intracranial lesion, and we should have to look to other characters of the headache—its site, intensity, mode of evolution, the circumstances which affect it, and associated symptoms and signs—to suggest not only its intracranial origin but the nature of the causative lesion. To examine this problem as it affects all head pains exceeds the scope of our immediate inquiry. I propose, therefore, to confine myself to a consideration of certain pertinent questions.

1. How often does Headache indicate Organic Nervous Disease?

Physicians with differing special interests will give widely varying answers to this question. Spriggs found organic nervous disease in twenty-six out of 500 patients with chronic headache. Of my last 500 patients in whom headache was a dominant symptom, ninety-six were suffering from organic nervous disease. Doubtless the neurologist would find an even larger proportion among his patients. It is thus only a relatively small number of sufferers from chronic headache who are the victims of organic intracranial disease.

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* Read in opening a discussion in the Section of Neurology and Psychiatry at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

2. Of what Intracranial Lesions is Headache a Common Presenting Symptom ?

At some time in their evolution all intracranial lesions may be associated with headache. In some, however, headache is a dominant and often the presenting symptom; in others it is merely incidental and overshadowed by other symptoms and signs. For reasons which will become clearer as our argument develops it is useful to classify the former group as follows:

Group I.—Those which trespass on the space occupied by normal intracranial structures ("expanding lesions"): (*a*) "*tumours*"—namely, neoplasms, cysts, abscesses, aneurysms, granulomata, subdural haematoma, hyperostosis interna frontalis, etc.; (*b*) *swelling of the brain itself* due to oedematous and inflammatory changes (for example, encephalitis, disseminated sclerosis, etc.), vascular lesions such as haemorrhage and thrombosis, injuries with resulting haemorrhages and oedema.

Group II.—*Meningeal irritation*, by inflammatory exudate (that is, meningitis of all types, whether acute or chronic), haemorrhage into the subarachnoid space, and cancer cells (as in meningitis carcinomatosa).

Group III.—*Disease of the cerebral arteries*—cerebral arteriosclerosis, syphilitic endarteritis, hypertension, etc.

Group IV.—A miscellaneous group with no demonstrable gross pathology—for example, post-traumatic headaches, migraine, and epilepsy.

Much overlapping will be detected in this grouping. A cerebral tumour is not infrequently associated with haemorrhage and oedema; trauma with a subdural haematoma or intracerebral haemorrhage, and so forth.

In relation to this classification three points are worth stressing. First, that the more rapid the development of the causative pathological lesion the more intense is likely to be the accompanying headache. Secondly, that the earlier and more marked the interference with the circulation of the cerebrospinal fluid, the earlier in onset and more intense is the associated headache. For example, while headache is the presenting symptom in 90 per cent. of patients suffering from tumours of the posterior fossa, in only 33 per cent. of supratentorial tumours is it the initial complaint. The former early obstruct the outflow of cerebrospinal fluid from the fourth ventricle and cause internal hydrocephalus. Moreover, patients with temporal lobe tumours, which more easily disturb the third ventricle, complain of headache as their initial symptom much more frequently than patients with frontal lobe tumours, where the circulation of the cerebrospinal fluid is unlikely to be disturbed in the early stages. And thirdly, whilst in adults the skull is a closed and, for all practical purposes, an inexpansile box, in children expansion of the cranium is possible before closure of the sutures, hence space-occupying lesions may not so grossly disturb intracranial pressure relations.

Before considering the significance of our classification, let us turn to the third question.

3. What Varieties of Headache may be Found Associated with Intracranial Pathology ?

There are four varieties of headache commonly complained of by patients suffering from intracranial disease.

Type 1.—A pain vaguely described as dull or throbbing, but sometimes as a "sharp stab," "bursting," or "splitting" pain. It is usually felt "inside the head," and the localization is indefinite, though during an attack, which is the best time to determine its site, it may be described as unilateral, frontal, occipital, or temporal. It is usually worse on waking, and careful questioning will often reveal that the exciting factor at this time is the sudden turning over in bed or sitting up. Its most characteristic feature is its aggravation by coughing, sneezing, stooping, or straining at stool, and often each pulsation of the heart, or on walking each step, gives a "thump in the head." Usually jugular vein compression aggravates though carotid artery compression eases the pain. It may be constant or intermittent, but paroxysmal exacerbations occur, and with these projectile vomiting is not uncommon. *This type of headache is complained of most commonly in "expanding lesions" of the brain.* Even when remote areas of the brain are affected the pain is usually referred to the forehead. If unilateral it is on the same side as the lesion in about 75 per cent. of cases; in 10 per cent., however, it is referred to the side opposite to the lesion. Occasionally we encounter attacks of sudden excruciating generalized pain "as if the head were going to burst." These come like a bolt from the blue and attain their maximum intensity within a few seconds, during which time the patient is quite uncontrollable and not infrequently semi-conscious. The attacks last a varying period, from a few seconds to a few minutes, and disappear quite rapidly. They are sometimes accompanied by vomiting and are usually followed by profound exhaustion. From such descriptions as I have been able to elicit this type of attack is simply an acute and intensely severe, if transitory, exacerbation of the type above described. Though rare, it is almost invariably associated with tumours, especially of the posterior fossa, and is a symptom of grave import because it indicates foraminal or tentorial crowding.

Type 2.—A sharp pain at the back of the head and radiating down the back of the neck, but which is referred also to the temporal and frontal regions and is accompanied by rigidity of the retronuchal muscles. It is aggravated by movements of the head and attempted flexion of the neck. This type of pain is seen in its most acute and severe form in basal subarachnoid haemorrhages which extend into the posterior fossa and irritate the medulla and upper cervical cord. It is also an almost constant accompaniment of all forms of meningitis. It occurs in about 50 per cent. of posterior fossa tumours and in about 25 per cent. of supratentorial tumours. Occipital neuralgia and neuritis are associated with a similar type of pain. In occipital neuralgia, however, there is a long-standing history of paroxysms of shooting pains with completely free intervals; neither neck rigidity nor fronto-temporal radiation of the pain accompanies a simple neuralgia. Where, however, an occipital neuritis results from vertebral disease or cervico-occipital fibromyositis, though the accompanying pain has neither frontal nor temporal radiation, limitation of neck movements might be present. This rigidity, however, differs from that of meningeal irritation both in its type and in its extent. The rigidity of meningeal irritation is confined to the extensor muscles of the neck, giving rise to neck retraction and to Kernig's and Brudzinski's signs; vertebral rigidity limits neck movements in all directions; fibromyositis causes pain on attempted stretching of the affected muscles. Moreover, the local tenderness and other evidences of spondylitis and fibromyositis serve easily to distinguish meningeal from extracranial causes of neck rigidity.

Type 3.—The *migrainous* type of headache—namely, a recurring paroxysmal headache often, though not necessarily, unilateral, accompanied by nausea, vomiting, dizziness, and frequently preceded by disturbances of vision or other sensory and motor aurae. Between the attacks the patient is free from headache, but during the attack the *pain corresponds to that of Type 1.*

A fourth type, which not infrequently accompanies pituitary tumours, is that of a dull ache, usually frontal and temporal, rarely spreading to the occiput, and associated with *neuralgic pains radiating to the eyes, eyebrows, or face.* This neuralgic element is thought to be due to direct involvement of the upper roots of the fifth nerve. Its first component does not differ from the pain described as Type 1; hence it does not merit differentiation into a separate type, and we can therefore limit our clinical description of the headache found in intracranial lesions to three types.

Correlation of Types and Lesions

When we tabulate these types and the intracranial lesions with which they are associated, a significant correlation becomes evident. Type 1 is commonest in Group I lesions—the "space-trespassing" group; Type 2 in Group II lesions—the "meningeal irritation" group. Type 3 is commonest in vascular lesions, especially intracranial aneurysms, cerebral arteriosclerosis, hypertension, and the migraine of allergic, endocrinous, biliary, etc., origin. All three types of headache (and this is to be specially noted in regard to migraine) are consistent with, though not necessarily indicative of, gross intracranial pathology. All types have been found on occasion associated with cerebral tumours, abscesses, encephalitis, thrombosis, head injuries, etc. Yet all have occurred in the absence of demonstrable cerebral pathology, thus suggesting that the essential mechanisms are functional and not dependent on an irreversible structural change.

The mechanism of Type 2 headache is clearly related to irritation of the meninges: a knowledge of the nerve supply to the meninges and meningeal vessels suggests that pain is referred to the skin areas supplied by the same sensory nerves (frontal, facial, and temporal pain arising from the fifth nerve which is distributed to the anterior and middle fossae; occipital and retronuchal pain from the upper cervical roots which supply the posterior fossa) and that the accompanying retronuchal rigidity owes its origin to an accompanying sensori-motor reflex. Direct irritation from pressure of the brain (for example, in internal hydrocephalus), or of a tumour itself, might cause similar "meningeal" pain. This type of pain can, as Northfield suggests, be regarded as analogous to somatic pains elsewhere in the body in that their characters (sharp, stabbing, and continuous) are similar and accurate localization is in both cases possible (cf. the pain of peritonitis, pleurisy, and pericarditis). When we analyse migraine (Type 3) we find that the headache component corresponds in all respects to Type 1. What serve to differentiate migraine as a syndrome are the aurae, the paroxysms, the common hemicrania, the short duration, and the free intervals.

It is tempting to regard the headache of Type 1 as being the expression of increased intracranial pressure and the resulting irritation of the dura mater. Indeed, until very recently this view was generally held. It was known that the cerebrospinal fluid pressure in this type of headache is usually high and that factors increasing intracranial pressure cause exacerbations of the headache. But similar headaches are found with low or normal cerebrospinal fluid pressures. In 15 to 20 per cent. of intracranial tumours the ventricular pressure is not raised. After lumbar puncture a headache clinically similar in all respects to Type 1 not infrequently develops. The experimentally induced headache following histamine injections occurs after the cerebrospinal fluid pressure, transitorily raised following the injection, has returned to normal. Hence it seems likely that both high and low cerebrospinal fluid pressures may bring into play the mechanism responsible for Type 1 headache.

The most recent work points to the sources of pain being closely related to the intracranial arteries and the dura mater around the large venous sinuses, and that "an abnormal state of tension in the walls of the cerebral blood vessels causes headache." It is, however, useful to pursue Northfield's suggestion further and regard Type 1 headache as corresponding to a visceral pain. On the analogy of cardiac pain I would postulate that the main factor producing Type 1 headache is cerebral anoxia, and that any condition which interferes with adequate oxygen utilization by the brain may result in this type of headache. I have not the space to pursue this conception in greater detail, and I am aware that oxygen deficiency itself may disturb vascular tone, but I would stress the striking benefit which results from oxygen administration in all forms of Type 1 headache (especially migraine and hypertension) and often in meningeal headaches—for example, after encephalography.

On this view all headaches of Type 1, whether the cause be general or intracranial, are an expression of a similar mechanism. Hence the description of the quality of this headache *per se* is not of great diagnostic significance. The features which suggest that a Type 1 headache might be associated with intracranial disease are: (1) its *site* (especially predominantly hemicranial); (2) its *course* (especially if progressively intense); and (3) accompanying signs of (*a*) *increased cerebrospinal fluid pressure* (papilloedema and manometry), (*b*) *focal nerve signs*—irritative and paralytic, or (*c*) *Type 2 headache.*

To summarize: (1) Type 2 headache invariably points to an intracranial lesion associated with meningeal irritation by blood, inflammatory exudate, neoplastic cells, parasites, cyst fluid (for example, hydatid), or direct pressure. (2) Type 1 headache might be due to any general or intracranial lesion which leads to cerebral anoxia. An intracranial origin is suggested not by the description of the headache but by the associated symptoms and signs.

A few words must be added on migraine, epilepsy, and post-traumatic headaches. The focal aurae of migraine which precede the hemicrania by a variable though short period may be accompanied by phenomena of angiospasm and relieved by alleged vasodilators (for example, ergotamine tartrate); but for the headache which follows, if the attack is not aborted in an early stage, these drugs are of no value, though the inhalation of oxygen (100 per cent.) will in most cases give complete relief. Similar beneficial effects have been observed after giving oxygen in post-epileptic headaches. The headache following trauma often has a Type 2 component, though Type 1 is dominant. The relief from post-traumatic headache which occasionally follows air injection into the subarachnoid spaces may be the direct result not only of the breaking down of meningeal adhesions but also of preventing traction on the smaller cerebral arteries by these adhesions, with resulting alterations in vascular tone.

A Scheme for Investigation of Patients

On the basis of the above observations it is possible to formulate a scheme for the investigation of the patient in whom headache is a dominant and early symptom. It must aim at providing answers to three questions: (1) Is an intracranial lesion present? If so, (2) what is its site? and (3) what is its nature?

In the first instance a careful *anamnesis* is essential, for in most cases it will provide the major evidence on which the presence of an intracranial lesion is suspected. We must inquire closely into how long headaches have been present and how often they recur. What is their site, duration, intensity, and character? Are they improving or becoming worse? Is there an aura? Does a late meal, fatigue, worry, or excitement precipitate an attack? Are they related to the menses? Is there a family history of similar headaches, of hay-fever, asthma, eczema, or urticaria? Does heat relieve and cold aggravate? Is the scalp tender to touch? (If so, a "rheumatic" cause is likely.) Does reading bring on the headache? Have glasses relieved them? Is the nose stuffy before the attack? Has there been a recent cold? Is there a nasal discharge? These and a host of other questions may be put, and a correct interpretation and assessment of the answers will almost invariably guide the physician to the seat of the trouble.

Next a careful *clinical examination* should be carried out. It must in all cases include an examination of the fundi for papilloedema, retinitis, arteriosclerosis, choroiditis, etc., and a detailed examination of the central nervous system for evidence of focal disease, increased intracranial pressure, meningeal irritation, etc. Palpation and auscultation of the skull must never be omitted. If necessary, the assistance of an ophthalmologist to exclude local ocular causes—for example, errors of refraction, impaired ocular muscle balance, glaucoma, etc.—and of a throat specialist to exclude causes in the nasopharynx, sinuses, and ears must be sought, though the unmasking of unsuspected pathology in these sites does not necessarily reveal the cause of the headache. In my experience careful questioning will usually decide whether a headache has an ocular or a sinus origin: the characteristics of these headaches do not resemble those we have described as occurring in intracranial lesions. The occurrence of meningitis and cerebral abscess as a complication of sinus disease and otitis must be remembered. Physical examination will include also a search for cardiovascular sclerosis, hypertension, toxaemias, etc.

Accessory Methods of Investigation

If the suspicion of an intracranial lesion is raised, accessory methods of investigation might have to be undertaken. Of these, two are of prime importance: first, an examination of the *cerebrospinal fluid*; secondly, *radiological investigation.* If a tumour is suspected, lumbar puncture must not be lightly undertaken, because of the danger of foraminal or tentorial crowding. In all cases the cerebrospinal fluid pressure should be measured; and a full chemical and bacteriological examination will usually show characteristic changes where meningeal irritation or infection is present. Syphilis, subarachnoid haemorrhage, uraemia, lead encephalopathies, etc., often produce pathognomonic changes in the fluid. *X*-ray examination of the skull and sinuses has become a routine in the investigation of chronic headache. Contrast radiography (after the injection of air into the subarachnoid space or ventricles, or, when aneurysms are suspected, after the injection of thorotrast into the cerebral arteries through the common carotid) is a measure of growing importance, but should be undertaken only by the expert.

In coming to a decision about the *nature of the intracranial lesion* responsible for headache the physician will consider the age of the patient; the site of the lesion; the duration and mode of evolution of the symptoms; evidence of disease elsewhere—for example, syphilis, scar of radical mastectomy, neurofibromatosis, etc.—all of which lesions might have accompanying intracranial pathology; and accessory tests—serological, cutaneous, blood and cerebrospinal fluid examinations, auscultation of the skull, and radiography. A detailed consideration of the significance of these is beyond the scope of my contribution.

Conclusion

I have attempted to formulate the principles which should govern the diagnosis of the intracranial causes of headache, with special emphasis on that aspect of the problem which confronts the general physician. The commoner pitfalls should be avoided by remembering

1. That headaches which are progressively severe or recur in paroxysms of increasing frequency and severity, and are accompanied by dizziness, vomiting, mental deterioration, epileptiform attacks, or focal nerve signs, must be regarded as due to organic brain disease until the contrary is proved.

2. That the onset of migraine after the age of 40 should arouse the suspicion of gross intracranial disease. The most commonly associated lesions are cerebral tumour, syphilis, and hypertensive cerebral arteriosclerosis.

3. That migraine constantly localized to the same side and followed by ocular paresis is almost diagnostic of a basal intracranial aneurysm.

4. That recurring attacks of so-called cyclical vomiting in children, if accompanied by a severe headache, usually indicate a posterior fossa tumour.

5. That the diagnosis of a "psychogenic headache" is often the refuge of the diagnostically destitute. It should be the last and not the first suspicion, and the diagnosis must be based on positive evidence, not solely on "the absence of any evidence of organic disease."

6. That an intracranial lesion, even a tumour, may run its course without at any time giving rise to a complaint of headache.

Summary

The customary classification of the causes of head pains is given.

The following questions are considered: (1) How often does headache indicate organic nervous disease? (2) Of what intracranial lesions is headache a common presenting symptom? (3) What varieties of headache may be found associated with intracranial lesions?

From an analysis of the clinical histories two types which finally emerge are reviewed.

Migraine, epileptic, and post-traumatic headaches are discussed.

A scheme is formulated for investigation of the patient in whom headache is a dominant and early symptom.

Small-pox Vaccination.—The intradermal injection of vaccinia virus which has been cultivated in a medium containing chick embryo tissue produces no untoward reaction and a considerable though possibly not fully adequate degree of immunity. It is suggested that this proceeding should be applied six to twelve months before ordinary dermal vaccination with calf-lymph virus in order to minimize the undesirable effects which the latter may cause. The authors resent the attitude which regards an extensive vaccination scar as a "badge of health"; such a scar is not only unnecessary but gives a sense of security which with the lapse of time ceases to be justified.—Amount and Duration of Immunity induced by Intradermal Inoculation of Cultured Vaccine Virus. T. M. Rivers, S. M. Ward, and R. D. Baird.—*J. exp. Med.*, June, 1939, 69, 857.

HEADACHE AS AN EARLY SYMPTOM OF NERVOUS AND MENTAL DISORDER*

BY

DESMOND CURRAN, M.B., F.R.C.P., D.P.M.

Psychiatrist and Lecturer on Psychological Medicine to St. George's Hospital; Honorary Psychiatrist to the Maida Vale Hospital for Nervous Diseases, London

The frequency of headache as a complaint needs no emphasis, and there is an increasing recognition that it should very often be regarded as evidence of a psychiatric problem. Thus Spriggs (1935), in an analysis of 500 cases, came to the conclusion that in 203 the headache was of "functional" origin. This finding is all the more striking in that Ruthin Castle is primarily concerned with cases of organic disease. There can therefore be little doubt that the headache in a large number of these cases was thought before admission to be directly dependent upon some physical or exogenous cause, which the most thorough physical investigation failed to reveal. Indeed, it is probable that the recognition of headache as evidence of a psychiatric problem is apt only to be reached by a process of exclusion, for which purpose the maxim that it is necessary to eliminate all possible physical causes before deciding that a case is "functional" is taken as the guiding principle. There can be little doubt that a mistakenly conscientious and sometimes ruthless application of this principle can have the most unfortunate consequences; and we have all seen patients who have been subjected to elaborate investigations, treatments, and even operations which, quite apart from the consumption of time and money involved, have been as unnecessary as they have been negative, or even actively harmful, in their results.

The objection may well be raised that it is very easy to be wise after the event, and that the above criticism would be more helpful if psychiatry had really a positive contribution to make to the diagnosis of a "functional" headache, to supplement the purely negative position that this is a question of excluding all possible physical causes. I propose, therefore, to discuss what seem to be some of the *positive* points in the diagnosis of these headaches as revealed by the study of (1) the nature of the complaint, (2) the past history of the individual concerned, and (3) the other or associated symptoms that may also be found. Before attempting these tasks it may be well to touch, very briefly, upon certain general considerations, starting with some possible misconceptions.

Psychiatric and Psychogenic

It should be clear that when the claim is made that the headache of a particular patient should be regarded as evidence of a psychiatric problem, this does not necessarily imply that the origin of the headache is purely psychogenic. Headache is a symptom that may be encountered in every type of mental disorder, and not even psychiatrists, who believe some queer things, hold the view that all mental disorder is purely psychogenic in origin. There is, in fact, general agreement that mental ill-health (with or without headache as an accompanying symptom) results from the interaction of numerous factors, which can roughly be grouped as mental, physical, and constitutional; and these three factors are always inevitably present and operative, though they vary greatly in their practical importance from case to case.

Bearing the above considerations in mind, it is easy to understand how misleading the classical antithesis between "functional" and "organic" may become; for by "functional" is often understood "psychogenic," and by "organic" is often understood "physical" or "exogenous." Thus it is very easy for the organically minded to make the mistake of attributing a headache to some physical finding which may be coincidental, concomitant, or consecutive rather than causal, or which may only be a contributory factor in the production of that general state of mental ill-health of which the headache is a symptom; whereas for the psychologically minded it is very easy to make the mistake of attributing an organic headache to a psychogenic situation which may also be merely coincidental, and, given sufficient determination, a psychogenic situation of a sort is forthcoming in us all.

The question as to whether a headache should or should not be regarded as evidence of a psychiatric problem does not, I think, depend upon the presence or absence of physical findings, but rather upon whether the headache can be directly attributed to the operation of impersonal physical factors, or whether it is attributable to and evidence of personality problems or disorder of the personality as a whole, in the production of which physical and constitutional as well as psychological factors may well have played a more or less important contributory part.

Special Significance of our Head

It is true that we have a general and objective perception of our head as part of our body, but our head also has for us a significance such as no other part possesses. Our head is not only experienced as a physical whole but is recognized as the seat of many of our most important sense organs, upon whose functional integrity depends our mental as well as our physical orientation to the environment. Although the eyes probably hold the first place for most of us in this connexion, the general principle is particularly well illustrated in the stimulating article by Schilder (1933) upon the rôle of the vestibular apparatus in psychiatry and psychiatric symptomatology.

Our heads, and what they contain, are thus of very special importance to us. Moreover, the central nervous system has no sensory organ of its own, and consequently we have no direct perception of its action. It is therefore easy to understand how it comes about that our head is not only something which is physically experienced but is also something which is psychologically experienced as the place where our ego is localized. Our head accordingly comes to mean for us the most important part of being, our personality; and this psychological meaning and significance finds frequent expression in such common metaphors as "losing" or "keeping" our head.

The special significance attached to the head can also be seen in the alarm caused by a fracture of the skull or a tumour in the brain compared with the lesser reaction produced by similar events in other parts of the body. For anything that may affect the brain or head is experienced subjectively as a very special threat to the ego or personality; and, conversely, a threat to the personality or upset of the sense of well-being, however caused, is often experienced subjectively as a head discomfort or headache. This is surely the reason why it should be that head discomfort or headache is such a frequent symptom of mental ill-health; and this head experience or headache has typically a global quality of a highly unpleasant character that pervades the whole being and personality rather than the quality of an objective perception of definite sensory pain.

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* Read in opening a discussion in the Section of Neurology and Psychiatry at the Annual Meeting of the British Medical Association, Aberdeen, 1939

1. Nature of the Complaint

These considerations may help to explain why it can almost be said that the characteristic thing about the psychiatric headache is that it is not characteristic, except perhaps of the personality of the sufferer. Thus Wilson (1938), in his interesting study of patients with headache referred for psychotherapy, divided them into three groups—those with a sense of pressure or heaviness, those with a dull ache, and those with a sense of throbbing—and came to the conclusion that the former two varieties tended to occur most frequently in patients with a more passive type of personality, while the latter variety occurred in more active or aggressive types. Wilson also makes the important point that half his patients described their headaches in terms which were not exaggerated, and did not use such colourful phrases as "like a screw driven into my skull," or "every hair of my head like a wire being drawn." This is not really surprising, for not every sufferer from mental ill-health needs to find self-expression in melodramatic language.

THE QUALITY OF THE HEADACHE

I submit, therefore, that the typical characteristic of the psychiatric headache is the subjective experience of the quality of what might be called "closeness," as opposed to "remoteness," to the personality. The so-called functional headache has not so much, typically, the quality of a sensory perception as of an unpleasant experience with a special personal significance; whereas the typical quality of the organic headache is that of a sensory perception, about which the patient is able to assume a more or less detached attitude unless the pain is so intense (as in meningitis) as completely to pervade and overwhelm the whole being. Confirmation of this view of the difference in quality comes from the fact that patients who have suffered or who are suffering from both types of headache can usually distinguish between the two quite readily.

Localization.—I think this quality of "closeness to the personality," or special personal significance, is independent of the generalized or localized character of the headache (and "functional" headaches may be either), although it may help to explain why so many "functional" headaches are of a relatively diffuse kind. A possible explanation of the frequent localization at the base of the forehead between the eyes may be due to the fact that, according to Claparède (1924), this is where many of us localize our ego. It would be interesting to know whether blind people do so too, and, if not, whether blind neurotics are such frequent sufferers from headaches of this type. Again, localization to the front or back of the head may correspond to the vulgar divisions of the head in the popular mind, just as the band round the head may have its origin from our habit of wearing caps or hats. The reason for these localizations may hence correspond in principle to that of the glove and stocking distribution of hysterical anaesthesia, the particular localization in all instances being dependent upon the conceptions of the part held by the individual concerned. In other cases the type of headache seems to be derived from the type of emotional experience, as in the "pressure" headache of those who feel "oppressed."

ATTITUDE TOWARDS THE HEADACHE

This feature is really but another aspect of the quality of "closeness" to the personality or "personal significance" which has already been stressed. Hence the headache comes to be regarded in rather a special proprietary way as *my* headache, on to which, as also on to those who try to treat it, is often projected the same or similar emotions that were aroused by the emotional situation to which it owes its birth. Thus, as we all know, the doctor often finds himself used as a convenient vent for dissatisfaction.

DISTURBANCES OF FUNCTION

The characteristic feature here of the "functional" headache is the *selective* disturbance of function that is shown. Thus the complaint may be so severe as to prevent almost any activity; but sleep and appetite may remain unimpaired, and the capacity to perform unpleasant activities is usually particularly affected. Again, the complaint may be that the pain is so intense that the patient can think of nothing else and alleges total inability to concentrate. Yet objective tests for attention and memory may reveal no impairment; while the same examination of a sufferer from an organic headache who complains similarly will usually disclose definite defects.

THE REACTIVE QUALITY

Another very important point of differentiation comes from a study of the factors that influence the headache, when it will be found that the organic headache is influenced by such physical events as changes in posture; whereas the "functional" headache is typically only much influenced by psychological events, such as the arrival of a wanted or an unwanted visitor, or the prospect of being faced by a pleasant or an unpleasant task. These variations are often very obvious to the friends or relatives, who, not unnaturally, incline to take up the attitude that the neurotic patient is putting it on.

Is the Pain Real?—Although, as I believe, the "functional" headache has not typically the quality of a sensory perception, it is nevertheless an extremely real and unpleasant experience, as I for one know. To question whether this experience is a "real pain" seems to me to be playing with words. And indeed, as Muncie (1932) has pointed out in his fascinating study of those patients who complain of a sudden sensation of snapping or cracking in the brain—what he calls "psycholeptic" attacks—certainly this experience, when vivid enough, appears often to possess a definite sensory quality as a component of what I have stressed as the far more important attribute of intense personal significance.

2. The Past History

It will readily be understood that, since psychiatry deals with the total personality, the investigation of a single symptom, such as headache, can only usefully be undertaken in the light of the total setting in which it is shown. Again, considerable intelligence and rather special powers of introspection and exposition are necessary in order that the qualities that have been put forward as characteristic of the "functional" headache can be elicited, and many of our patients are not conspicuous for these gifts. I cannot but feel that Reilly (1926) was fortunate over his patients, whom he was apparently wont to ask, "Is it a real pain or hurt?" to which the "functional" patients replied "No," instead of "Eh, what's that?" or getting angry, as might have been expected. It is therefore essential to inquire carefully into the past history of each patient, and to obtain, wherever possible, an independent account from a friend or relation, who should be seen separately. An independent account often gives a very different complexion to what the patient has said.

This is no place to attempt a brief guide to the taking of a psychiatric history, but the following suggestions are put forward as very rough working rules.

Patients with Good Work Records and Personalities.—In such patients there is a prima facie case that the headache is of organic origin unless a history of special strain immediately preceding the onset of the headache is rather readily forthcoming. The main exceptions here are provided by those who are suffering from a mental illness (with associated headache) which is of constitutional origin, such as an endogenous depression; but in such cases other symptoms of the mental illness in question will also be shown. It is, I am sure, a great mistake to suppose that the sources of strain resulting in a "functional" headache are necessarily of a remote or complex kind, or in any true sense "unconscious." It must, however, be remembered that many patients will at first deny having been worried. They often feel that they should not have been worried, and therefore mistakenly say to themselves and to others that they have not. But a little questioning may readily reveal what has happened—namely, that the patient has been well enough aware of the sources of strain, but has failed to admit them to himself or to connect them with his headache, which is thus substituted for the original source of worry, only to become an additional source of worry in itself. I believe that a large number of anxiety states with associated headache clear up quite simply when the true sequence of events is made clear.

Patients with Poor Work Records and Personalities.—There is a very considerable chance that a headache is of "functional" origin in such patients, even if only a relatively trivial source of worry is forthcoming, or even if no obvious source of worry or strain is forthcoming at all after the most careful inquiry.

3. Associated Symptoms

It is not, I think, sufficiently realized that in the diagnosis of a psychiatric condition as much, if not more, can be learned from the type of reaction that is shown as from a study of those psychopathological factors that may have helped in its production; for, as I have already said, psychiatry is not solely a problem of psychogenesis. It is, of course, obvious that it will only be possible to deal in the most cursory manner with those associated symptoms that should suggest that a headache is part of a psychiatric syndrome.

Schizophrenia.—As Brown (1936) has pointed out in his valuable study of the "bodily complaint," or hypochondriasis, the headache or head complaint of schizophrenia can be of two types: that associated with anxiety or tension and of the non-specific "functional" type that has been described, and that distinguished by its characteristic bizarre and "symbolic" features. Thus a schizophrenic patient said to me recently that he felt not "as if" one side of his head was smaller than the other, but that one side of his head *was* smaller than the other, which he attributed to having his will power drained away by mystical forces. The description of the symptoms to be looked for in the early diagnosis of schizophrenia is an extraordinarily difficult task, but one which fortunately I need not attempt, as it has recently been so admirably performed in the readily available paper of Mayer-Gross (1938).

Organic Reactions.—It is surprising with what frequency the diagnosis of an early organic type of mental reaction, due to arteriosclerosis or other causes, is missed when the symptoms of anxiety or depression accompanying such reactions are so prominent as apparently to dominate the picture (Curran and Slater, 1935). Such patients are often thought to be suffering from a "functional" reaction in the production of which the emotional lability consequent upon organic changes frequently leads to the appearance of what is in fact a spurious psychogenesis, which further confirms this impression. Tests for memory, retention, and concentration will, of course, readily reveal the true state of affairs.

Affective Reactions.—A special difficulty arises in *depressive states,* because such patients often look physically ill, and show in addition the biological concomitants of depression, such as loss of weight, sleep, and appetite. The depressed mood may be thought to be due to the presumptive or assumed physical cause of the headache of which these patients so often complain, which hence may well become the centre of interest. Here again it is impossible to give a brief summary of the symptoms of depression, but reference may be made to the full and excellent description by Lewis (1934). A particular manifestation of affective reactions—namely, depersonalization—is, I think, another frequent stumbling-block, for such patients often complain primarily of their heads, and may not complain primarily or at all of their low spirits.

Anxiety states will, of course, often show some of the other and protean manifestations of anxiety, which cannot be gone into here, but which so often suggest the presence of physical ill-health and may thus lead to the same mistake as was mentioned in the case of depressive reactions.

The *hysterical* or purposive headache is often seen unaccompanied by other symptoms, and the main help must hence often come from points which have already been mentioned, such as the service of such headache in avoiding the fulfilment of unpleasant duties and tasks.

Some of these headaches are, however, very continuous and persistent, and particularly resistant to any form of treatment. It is interesting to speculate as to whether the intractable nature of a "functional" headache of this type as the sole complaint may not be associated with its location in the head, this being perhaps an indication of very deeply seated problems of the personality.

Physiological Component in the Production of "Functional" Headaches

The suggestion has been made more than once that "functional" headaches may, in part at least, be dependent upon the results of the physiological changes accompanying emotional disturbance, perhaps effected through the mediation of the vasomotor system. One does not, of course, doubt that structural or organic changes underlie or accompany all manifestations of function; but for myself I feel very dubious as to whether "functional" headaches are accompanied by, or have partly their origin in, physiological changes that will readily lend themselves to investigation. Thus I doubt whether these "functional" headaches are really analogous, in the mechanism of their production, to migraine, which I would regard as unquestionably a headache of organic type.

The studies of Wolff (1937) and others have, of course, demonstrated the importance of the psychobiological background and psychological factors in the production of many migrainous attacks. But these psychological factors appear to act as a trigger which fires off a train of organic events; and for various reasons I very much doubt if the same underlying sequence can be postulated for the types of headache I have been considering here. I should much appreciate the views of others on this speculation.

Finally, I am very conscious of deficiencies, distortions, and omissions, and of the fact that this paper is full of the dogmatism and economy of truth which is perhaps inseparable from a brief presentation of such a colossal subject.

Summary

The recognition of headache as evidence of a psychiatric problem is discussed.

Positive points in the diagnosis of such headaches are put forward as a supplement to the principle of exclusion, so apt to be used alone.

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RESULTS WITH EPANUTIN IN MENTAL HOSPITAL PATIENTS

BY

SUSANNAH DAVIDSON, M.B., B.S., D.P.M.

AND

JOHN D. SUTHERLAND, B.Sc., Ph.D., M.B.

Assistant Physician, Glasgow Royal Mental Hospital

We have recently treated twelve epileptic patients in the Glasgow Royal Mental Hospital with epanutin (sodium diphenyl hydantoinate) in place of either sodium phenobarbitone or prominal. The drug was administered according to the advice of the makers (Parke, Davis and Co.) by gradual replacement of the drug already in use, and the changes in the frequency of fits or in the mental state were studied. The following notes give the results.

Case Reports

Case 1.—A man aged 30, whose first fit occurred eight years previously, has been three years in hospital. He is well preserved intellectually, with several characteristics of the epileptic personality, especially irritability and egocentricity. Major and minor attacks occur with about equal frequency. As he has ground parole and there is amnesia for the fits it is impossible to keep accurate account of the incidence. Before epanutin was given he was receiving in alternate periods of about six weeks either 1 grain of sodium phenobarbitone or 3 grains of prominal twice daily. These changes were usually followed by a considerable reduction in the number of fits for about two weeks and an associated improvement in his mood. Epanutin, one capsule (0.1 gramme) thrice daily, was given for sixty-four days. During the first month there was a striking diminution in the fits, and he was bright and enthusiastic about the new treatment. In the following five weeks, however, he had more fits than usual, twenty being recorded. He relapsed into his former state and requested that the drug be changed; no toxic effects occurred. On resuming prominal he had only seven recorded fits in the next twenty-five days.

Case 2.—A man aged 31 had his first fit when six years old, and he has been ten years in hospital. He is a deteriorated childish personality, with minor fits almost as frequent as major fits. Usually he is maintained on 3 grains of prominal twice daily. Epanutin, one capsule thrice daily, was given for thirty-six days, and was stopped because of increased irritability and difficult behaviour, though no other toxic symptoms were observed. There was a slight increase in the number of major fits and a diminution in minor attacks.

Case 3.—A man aged 46, whose fits began twenty years ago, has been thirteen years in hospitals. His personality is very deteriorated and his behaviour noisy, aggressive, and impulsive. Before the change to epanutin he was given 3 grains of prominal twice daily. On one capsule of epanutin three times a day the fits were less frequent, but the drug was stopped because of nausea and increased irritability.

Case 4.—A man aged 40, with fits during the past twenty years following a war injury, since when he has been in hospitals, has minor fits at long intervals and an occasional major fit. His personality is deteriorated, and occasionally he has attacks of vomiting with headache, though no signs of raised intracranial pressure are present. Epanutin, one capsule thrice daily, was stopped after thirty-six days when one of his vomiting attacks became unusually severe and prolonged. The vomiting disappeared shortly after the withdrawal of the drug; it is probable that the drug was causing an exacerbation of the usual attack. No change was observed in his mental condition, nor was there any significant change in the number of fits.

Case 5.—A man aged 40 whose fits started at the age of 10, has spent the last twenty-six years in hospitals. His mental condition is very deteriorated, his speech being incoherent. The fits are all major ones, and he is usually given prominal. Epanutin, one capsule thrice daily, had to be stopped after thirty-four days on account of nausea and refusal of food. There was no change in his mental condition, and his fits were more frequent.

Case 6.—A man aged 48, whose first fit occurred when he was 22 years old, has been in hospital five years, during which time he has shown progressive deterioration, with considerable memory defect, some confusion, and occasional outbursts of irritability. He has major fits, mainly during the night, at long intervals while on prominal. Each major fit is followed by about twenty-four hours of marked confusion. Epanutin, one capsule thrice daily, had to be stopped after nineteen days because of increased confusion and ataxia, which made it difficult for him to find his way about the ward and which prevented him from being able to feed himself. He was also much more dull and unresponsive than usual. The toxic manifestations disappeared a few days after withdrawal of the drug.

Case 7.—A man aged 55, whose fits began when he was 14 years old, has been thirty-four years in hospital. He is an extremely egocentric childish personality, vain and with numerous mannerisms, who has slightly more minor than major fits. Epanutin, one capsule thrice daily, was stopped on the thirty-seventh day of its administration when he developed an erythematous rash on his hands and legs which gradually spread over his body and which was accompanied by intense itching. Later, oedema appeared and was succeeded by an exfoliative dermatitis. There was no change in his mental condition, but the fits ceased during the epanutin period. The toxic manifestations were relieved by intravenous sodium thiosulphate.

Case 8.—A woman aged 51, with onset of fits in childhood, has been nineteen years in hospital and is now a somewhat deteriorated person with great irritability. Her attacks are usually major with occasional minor fits. Epanutin, one capsule twice daily, was given for fifteen days, when she refused the drug because of headache and nausea. There was an increased irritability, but there was no change in the incidence of the fits.

Case 9.—A woman aged 47, with a history of fits since infancy, has been twenty-eight years in hospital. She is fairly well preserved mentally, with marked religiosity and spells of irritability. Major and minor fits are about equal in frequency, and she is usually given 1 grain of sodium phenobarbitone twice a day. Epanutin, one capsule twice daily, was maintained for sixty-seven days without any change in her mental state or in the frequency of the fits being noted. The drug was stopped when a vesicular rash appeared over the upper half of the right side of the trunk and spread down the right arm.

Case 10.—A woman aged 32 has had fits since the age of 9 years. She has been in hospital for four years and is a very demented personality. Major and minor fits are about equal in frequency. Epanutin, one capsule twice daily, has been given for sixty-eight days with no change in her mental status, but a diminution in the number of fits. No toxic effects developed.

Case 11.—A woman aged 53 has had fits for the past thirty-eight years, twenty years of which have been spent in hospitals. She is a depressed and rather demented bedridden woman whose fits, usually major, are infrequent. On the seventeenth day after epanutin, one capsule twice daily, was begun she asked to have the drug stopped because of headache, dizziness, and general malaise. It was noticed at the same time that a blotchy erythema had appeared on her legs.

Case 12.—A woman aged 49, whose fits began at the age of 13 years, has been in hospital three years and is now a noisy, excitable, and deteriorated personality. She was formerly given 1 grain of sodium phenobarbitone twice a day. As she became noisy at night after epanutin was substituted, she was given 1 grain of sodium phenobarbitone at nights in addition to one capsule of epanutin twice daily. There has been no change in her mental condition or in her fits after seventy-eight days of the epanutin, and no toxic effects developed.

Conclusions

Before drawing any conclusions it must be pointed out that these patients are a rather selected group. Most of them are over 40 years of age and have had a long history of hospitalization and a correspondingly long treatment with drugs. They were almost all admitted for psychotic behaviour as well as fits, and most of them were unsuitable for epileptic colonies, as they were unable to work.

The outstanding result of the treatment is the appearance of toxic effects, eight of the twelve cases showing these within a few weeks. They included headache, giddiness, nausea, loss of appetite, and ataxia. Three cases developed rashes, severe in two, with one being followed by an exfoliative dermatitis. These effects have already been referred to in connexion with this preparation (see references), but their frequent and early appearance obviously restrict the use of the drug, for though some are possibly not serious in themselves they antagonized these patients. One point perhaps worthy of note is that the three youngest patients showed no toxic effects.

In considering the mental effects we had only one patient who showed improvement, but this lasted for only a few weeks, after which he resumed his former state. It has also to be recalled that this patient showed a temporary improvement upon a change from sodium phenobarbitone to prominal or vice versa. The effect of the change to epanutin was rather more marked, however. His relapse followed upon the recurrence of fits, but the appearance of toxic effects in other cases made us reluctant to increase the dose. It would appear that in his case, as in some of the others, epanutin makes a useful addition to the drugs on which patients may be maintained for a few weeks. The absence of sedative effect proved an undesirable feature with several of our patients, as it released the excessive irritability and, in some cases, impulsive behaviour which was much relieved by the other drugs.

With regard to the anti-convulsant properties, the data are too limited to make critical observations. The table shows the number of fits to be expected during the period that epanutin was given, this being calculated from the average incidence of fits in the preceding six months in each case. As there appeared to be little change in the character of fits in most cases we have combined the major and minor attacks in the term "fit." It will be seen that there is a balance in favour of epanutin.

Table showing Summary of Results

Case No.	Age in Years	Duration of Epilepsy in Years	Change in Mental State during Epanutin Period	Period of Epanutin Administration in Days	No. of Fits in Epanutin Period	No. of Fits expected on Former Drugs	Reasons for stopping Drug
1	30	8	Brighter for 4 weeks	64	Not recorded		More fits than usual
2	31	25	Increased irritability	36	4	5	Increased irritability
3	46	20	,, ,,	34	2	4	,, ,, and nausea
4	40	20	No change	36	3	2	Vomiting
5	40	30	,,	34	13	10	Nausea ; refused food
6	48	26	Dull and unresponsive ; increased confusion	19	1	2	Confusion and ataxia
7	55	41	No change	37	0	4	Severe rash followed by exfoliative dermatitis
8	51	45	More irritable	15	3	2.5	Headache and nausea ; refused drug
9	47	46	No change	67	7	8	Vesicular rash
10	32	23	,,	68	3	5.5	Not stopped
11	53	38	,,	17	—	—	Rash, headache, and giddiness
12	49	36	,,	78	11	12	Not stopped

In short, our experience suggests that the drug is of use in the younger and better-preserved patients, but on account of its toxic effects it is advisable not to maintain it for more than a few weeks at a time.

We are indebted to Dr. Angus MacNiven, physician-superintendent of the Glasgow Royal Mental Hospital, for permission to give the treatment and to publish the results. We have also to express to Messrs. Parke, Davis and Co. our thanks for a trial supply of the drug and for advice.

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Muscular Dystrophy and Hypothyroidism.—In the issue of *Revue Neurologique* for May, 1939 (p. 513), P. Mollaret and J. Sigwald contribute a paper on "Generalized Muscular Atrophy of Rapid Onset in an Adult associated with Latent Myxoedema clinically cured by Thyroid Medication." In the same number (p. 548) G. Bourguignon also deals with the improvement effected by thyroid treatment of the condition. A case of generalized muscular hypertrophy without weakness or myotonia is described in a man of 56. The basal metabolic rate was − 13 per cent., and there were clinical signs of hypothyroidism. Biopsy showed no definite muscular abnormality. These symptoms, and also alterations in electrical excitability of the muscles, disappeared with thyroid medication. The literature on this condition is reviewed. The muscular changes are thought to be directly related to the hypothyroidism.

TREATMENT OF IRREDUCIBLE INTUSSUSCEPTION DUE TO MECKEL'S DIVERTICULUM

BY

R. STUPPEL, F.R.C.S.Ed.

Resident Surgeon, Montagu Hospital, Mexborough

Intussusception occurring in adolescence as a result of an invaginated Meckel's diverticulum appears to be not uncommon. Hamilton Bailey (1938) says that it is so regularly the cause that a precise pre-operative diagnosis can be made. Harkins (1933), on the other hand, from a statistical study of the literature, concluded that a Meckel's diverticulum accounts for only a small proportion of intussusceptions, while Ladd and Gross (1934), at the Children's Hospital, Boston, found that fourteen out of 372 cases were due to an inverted Meckel's diverticulum. Harkins (1933) found that the great preponderance of cases occur in the first ten years of life, but Romanis and Mitchiner (1937) believe that enteric intussusception is usually seen in children between the ages of 3 and 10; that it is the second commonest variety; and that it is usually due to a Meckel's diverticulum or an intestinal polyp. No age, however, is exempt, and Nédelec (1937) describes a case in a woman aged 52.

Perrin and Lindsay (1921–2) in their analysis of a large series of cases of all types of intussusception found that the enteric variety has much the highest mortality. This type tends to be recurrent or subacute, and in consequence does not reach the surgeon until late. In addition, no difference exists in the calibre of the entering and ensheathing layers, such as is found in the ileo-colic variety. The combination of these two factors renders the enteric intussusception frequently irreducible.

The problem that confronts the surgeon when he opens the abdomen and finds himself face to face with an irreducible intussusception is one which has exercised the minds and ingenuity of many. Where the intussusception is irreducible but not gangrenous Rowlands and Turner (1937) advise restoring the continuity of the canal by a short-circuit anastomosis, and leaving the mass in the abdomen; and they add—referring to infants—that recovery after resection of a gangrenous intussusception is a very rare event. Romanis and Mitchiner (1937), however, say that performance of a short circuit above and below the intussusception, while relieving the obstruction, still leaves the possibility of gangrene occurring with peritonitis. This latter teaching is supported by the figures given by Perrin and Lindsay (1921–2), in whose series the only treatment that was attended by any success was excision with end-to-end or lateral anastomosis. And Clubbe (1921) makes a plea for more frequent excision.

Elliot-Smith (1935) reports three very interesting cases of irreducible intussusception, in which he did a lateral anastomosis and returned the tumour to the abdomen, with or without suturing the neck. All three patients recovered. He says that peritonitis, even in fatal cases untreated by operation, is rare, as the gangrene is limited to the intussusceptum, and the ensheathing layer is usually healthy. Illingworth and Dick (1938) also consider that the vitality of the sheath is seldom imperilled.

The case that is now reported is instructive because it illustrates the danger of leaving behind in the abdomen an irreducible intussusception, which may at any moment become gangrenous and prove fatal.

Case Report

A girl aged 9 was admitted to hospital as a case of acute appendicitis. There was a history of previous attacks of abdominal pain in the right lower abdomen since she was 6 years of age, occurring at intervals of about six months, each time more severe, and lasting for about two hours or longer. There had never been any vomiting until this last attack, which had begun on the evening of the day before admission. There had been no constipation up to the onset of the pain, but she had not had her bowels open since then, nor had she passed any blood or mucus per rectum. She had never been seen by a doctor during her previous attacks, which had always subsided spontaneously and left her quite well.

On examination she was a well-nourished sturdy child, but somewhat pale. The pulse rate was 116, the temperature 99. While she was being examined she was obviously having spasms of colic, and cried out with the pain. The abdomen was slightly distended, but not rigid. There was a mobile horseshoe-shaped tumour, lying more or less equally on either side of the umbilicus.

Operation.—Under gas-oxygen-ether, the abdomen was opened by a midline subumbilical incision. The intussusception presented at once, and was readily delivered into the wound. It consisted of the terminal portion of the ileum, which had become bent until it occupied three-quarters of a circle, and measured about ten inches in length. The ends of the limbs were quite close together, and extended down to the base of the mesentery. It was quite irreducible. The sheath was healthy and showed no visible signs of gangrene. A lateral anastomosis was performed between the entering and the ensheathing layers an inch or so beyond the extremities of the loop, and the mass was returned to the abdomen. Two days later the pulse and temperature were rising, and the child was having pain. The abdomen was reopened through the original incision. There were patches of gangrene on the sheath of the intussusception. It was withdrawn from the abdomen, and, in manipulating it, the gangrenous areas gave way and spilled foul contents. The whole loop was excised, leaving the anastomosis intact, and the ends were crushed and invaginated.

During the next few days the child passed first a little blood per rectum, and subsequently loose stools. Her condition improved, and, apart from a slight infection of the anterior abdominal wall, she made an uneventful recovery.

DESCRIPTION OF SPECIMEN

The portion of bowel resected was the last twenty inches or so of the ileum. That portion of the bowel which formed the sheath was gangrenous. Within the inner layer, and forming the apex of the intussusception, was a completely invaginated Meckel's diverticulum. It was three inches long, and at first sight was mistaken for an intestinal polyp. In structure it resembled normal small intestine, and was everted without difficulty.

Discussion

This case very clearly proves the danger of leaving behind an intussusception, even though at the time the ensheathing layer appears to be healthy. Such a course may apparently be taken on occasions with impunity, but it seems quite an unjustifiable risk. The extra time needed to excise the tumour and invaginate the ends after the anastomosis has been completed is so small that it cannot materially add to the shock of the operation. If an excision is undertaken it is technically easier and quicker to perform the (lateral) anastomosis before amputating the tumour, just as, in a partial gastrectomy, it is easier to anastomose the stomach to the jejunum before amputating the stomach.

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THE DIAGNOSIS AND TREATMENT OF INFANTILE MASTOIDITIS

BY

P. W. LEATHART, B.A., M.B., B.Ch.

Surgeon in Charge of Throat and Ear Department, Royal Liverpool Children's Hospital

In winter a children's hospital contains many cases of severe air-borne infection—influenza, bronchitis, pneumonia, etc. In summer food-borne infection—diarrhoea and vomiting—is more commonly seen. In both summer and winter many bottle-fed infants are admitted. With suitable treatment and feeding a majority of these cases recover without complication. Some patients, however, perhaps after a temporary improvement, begin to go downhill mysteriously; lose weight rapidly, and die. In such cases, although during life the physical signs usually associated with mastoiditis, such as discharge from the ear and swelling behind it, were absent, yet a post-mortem examination has frequently revealed the presence of a purulent mastoiditis on one or both sides. Thus investigation of the records of 146 recent consecutive necropsies revealed that mastoiditis undiagnosed in life had been present on one or both sides in no fewer than twenty-nine cases. It is clear, therefore, that unsuspected mastoiditis is a common and often fatal complication, developing insidiously during the course of the above diseases.

The frequency with which mastoiditis complicates the above diseases has not been sufficiently realized: the reason for its development is to a certain extent shrouded in mystery, and since the physical signs which point to its presence are often masked by those of the disease from which the child is suffering, some confusion exists with regard to the diagnosis.

In order to clarify the problem it is proposed to discuss it under the following headings, pointing out: (1) the extreme frequency of mastoiditis as a complication in the above diseases; (2) the method by which infection gains access to the mastoid antrum and the material which causes it in each disease; (3) the local and general physical signs by means of which diagnosis can be made with confidence; (4) the treatment which experience has shown to be effective; (5) certain nursing details which have been found useful in prevention and helpful in promoting spontaneous recovery.

Frequency

At the Royal Liverpool Children's Hospital during the last six months mastoiditis has been recognized as a complication in thirty-six cases of children suffering from one or other of the above diseases. All were referred to the laryngologist by the courtesy of the physician or surgeon in charge, and in nearly all of them the classical physical signs usually associated with mastoiditis were absent.

Method of Infection

We must remember that the Eustachian tube is more horizontal in children than in adults, and that normally it opens with each act of deglutition. On account of this horizontal position any material in the post-nasal space finds its way through the Eustachian tube into the tympanum and thence to the mastoid antrum more easily than in adults—especially when the child is lying on his back while feeding. It is thus seen how easily infected mucus can enter the tympanum from the post-nasal space in air-borne disease, and how vomited material may do so in food-borne disease and milk in bottle-fed infants.

Diagnosis

We have seen that diagnosis is often obscured not only by the physical signs of the disease from which the child is suffering but also by the fact that those usually associated with mastoiditis are absent—for example, as a rule there is no discharge from the ear, and swelling behind it is never present at a stage when, in the interest of the child's life, treatment is imperative. Moreover, the child is too young to tell us that he has earache, and palpation over the mastoid process gives us no definite help. Nevertheless experience has shown that mastoiditis can be recognized in these children at an early stage by the presence of local physical signs, other than those usually associated with mastoiditis, in conjunction with considerations in regard to the child's general condition.

GENERAL CONSIDERATIONS

In the first place the child is suffering from an air-borne or food-borne infection or is a wasted bottle-fed infant. We have seen that in these illnesses mastoiditis is a common complication. If, therefore, such a child is not improving, mastoiditis is likely to be the cause and should always be suspected. Further, it may be that for the last two or three days an increase in the temperature has been noted. Perhaps the child has been crying out as if in pain. The nurse may have noticed that he has been putting his hand to his head or pulling at his ear or rolling his head on his pillow. Diarrhoea and vomiting may have increased or, if not present, have now appeared, leading to rapid loss of weight and dehydration.

LOCAL PHYSICAL SIGNS

A discharge from the ear is seldom present, but examination with the electric auriscope may reveal a pool of pus too small to appear outside. Often the tympanic membrane is pink, especially in the upper and posterior quadrant, or it may only show a loss of lustre or a wrinkled appearance like a piece of crushed tissue paper. Frequently nothing abnormal is seen.

There is, however, one physical sign which is constant—one that has not received the attention it deserves. It consists in the presence of a palpable gland or glands in the posterior triangle of the neck behind the sterno-mastoid muscle. The glands in this region are often easily palpable, but sometimes difficulty is experienced in detecting them, for they are small at first, but increase in size with the chronicity of the mastoid infection. It is therefore to be expected that at an early stage the glands are more difficult to find than at a later date. There are, of course, other conditions which produce enlargement of the glands in the posterior triangle of the neck, such as sepsis in the area of skin the lymphatics of which drain into the glands. But of all the conditions causing enlargement, mastoiditis in its catarrhal or purulent stage is by far the commonest. In the event, therefore, of glands being felt in this situation, and having excluded other causes, mastoiditis should always be suspected.

When this suspicion is strengthened by the presence of one or other of the above local signs and by the fact that the child is suffering from any one of the above diseases, experience has shown that a diagnosis of mastoiditis can be made with almost absolute certainty. Having made the diagnosis it is not suggested that an immediate operation is necessary in every case, for it has been found that in some instances mastoiditis in its early stage subsides spontaneously. Immediate operation is necessary only in the case of a child whose general condition is not improving, and who is losing weight and becoming dehydrated. In such a child operation is urgently called for in the interest of his life.

Treatment

About fifteen years ago the appalling mortality among young children in whom the mastoid cells showed unsuspected disease at necropsy led to a determined effort to recognize the condition during life and to adopt treatment at an early stage in the disease in the hope of saving the lives of children who would otherwise die. At first paracentesis was tried in those in whom the tympanic membrane showed changes. This proved unsatisfactory, for although some cases improved for a time, yet most of these patients died, and purulent mastoiditis was found post mortem. Gradually more and more were subjected to mastoidectomy, with the result that many children who were expected to die made a spectacular recovery.

Both now and for several years past the diagnosis is and has been made in the way outlined above, and if the child is losing weight or going downhill an immediate exploration of the mastoid is advised and carried out. The operation is an extremely simple one, and can be completed in less than ten minutes. It consists in opening the mastoid antrum and any cells which may be present, and leaving the lower part of the wound open so that drainage may take place posteriorly. The typical condition found at operation in an early case consists in the presence of swollen polypoid mucous membrane filling the antrum and any cells which may be present. At a later stage the polypoid mucous membrane is seen to be bathed in muco-pus; later still, frank pus is found, with destruction of bone. Experience has shown that, in mastoiditis due to air-borne infection, pus and bone disease are more likely to be found than when it develops as a complication in food-borne infection or in wasted bottle-fed infants.

We have seen that the complication is often bilateral, and as most of the children are critically ill it is not always a safe risk to operate on both sides at the primary sitting. We must therefore decide by the physical signs on which side to operate first. The rule is to choose that side on which the posterior glands are the larger, or that on which the tympanic membrane is the more abnormal—with one exception. In a bilateral case, if one ear is discharging and the other dry it has been found safer to choose the latter ear for the primary operation; for on the discharging side the mastoid cells are draining and on the dry side the infection is pent up.

Nursing Details

We have seen above how readily muco-pus, vomit, or milk can enter and infect the mastoid antrum while the child is lying on his back, and especially while being fed in this position. It is suggested, therefore, that children suffering from air-borne infection, diarrhoea, and vomiting, or, wasted bottle-fed infants, should never be fed while lying down, and that during the intervals of feeding they should be well propped up on pillows and constantly turned from side to side—and never be allowed to lie on their backs for any length of time. The routine adoption of these suggestions at the Royal Liverpool Children's Hospital has not only led to a definite decrease in the frequency of mastoiditis as a complication in the above diseases, but has also proved itself to be a potent factor in promoting spontaneous recovery in those cases as yet not ill enough to require operation.

An analysis of the case sheets of the thirty-six cases mentioned above brings out the following interesting facts.

Enlarged glands in the posterior triangle were present in every case. In seven cases the tympanic membrane appeared normal. In twenty-three cases the tympanic membrane was abnormal or pus was present in the meatus. In six cases there is no note as to the appearance of the tympanic membrane. Seven cases recovered spontaneously. Twenty-nine cases were operated on, either on one or both sides, mastoiditis in the catarrhal or the purulent stage being present in all. Eight of these patients died (27.5 per cent.). Twenty-one recovered (72.5 per cent.).

All the cases subjected to operation were critically ill, some apparently in the last stages of dehydration, which even intravenous salines had failed to improve. When this is realized a recovery rate of 72.5 per cent. must be considered eminently satisfactory, for, unless the complication is recognized and treated, death is almost certain.

Conclusions

That many children considered to have died from one or other of the above diseases do in reality succumb to unrecognized mastoiditis.

That this complication occurs with much greater frequency than is generally realized.

That diagnosis even at an early stage can be made with confidence.

That mastoidectomy will save the lives of about 70 per cent. of the children in whom the complication is present.

That young children should never be nursed or fed lying on their backs.

Summary

The frequency with which mastoiditis complicates other diseases in children is stressed.

The diagnosis and treatment of the condition are detailed.

Nursing precautions which lead to a decrease in the incidence of mastoiditis in child patients are given.

An analysis is made of the case sheets of a series of thirty-six such cases occurring at the Royal Liverpool Children's Hospital.

In *La Presse Médicale* for June 28, 1939 (p. 1031), Desmarest and Capitain discuss the value of testosterone treatment in menorrhagia, metrorrhagia, and menopausal disturbances. They describe a number of cases of metrorrhagia and menorrhagia in young women and in women at the menopause, and also certain cases of post-menopausal disturbances which they have treated with testosterone propionate with excellent results. In uterine haemorrhage they give testosterone alone, while in amenorrhoea they combine it with small doses of folliculin.

Clinical Memoranda

Artificial Restoration of Cardiac Rhythm

The following case, in which restoration of cardiac rhythm was successfully produced by artificial means, presents several features of interest.

CASE RECORD

A man aged 72 was admitted to hospital suffering from obstructive jaundice. Examination revealed an enlarged heart and auricular fibrillation. As, however, the biliary obstruction was complete it was decided that after the intravenous administration of glucose and calcium gluconate an operation should be performed. Spinal anaesthesia, using 1 in 1,500 percaine, was induced, and was supplemented by gas-and-oxygen administered by means of a McKesson apparatus. Shortly after the peritoneal cavity had been opened respiration ceased, and it was found that the heart had stopped. An incision was made in the left cupola of the diaphragm, and a hand was inserted into the pericardium. The heart was "massaged," or, rather, compressed and allowed to relax at regular intervals. Meanwhile, the anaesthetist carried out artificial respiration by means of intermittent compression of the reservoir of the McKesson anaesthetic apparatus. After a few minutes the heart beat spontaneously for about a dozen beats and then ceased. After another interval some further spontaneous contractions took place, again ceasing. Twenty minutes from the moment that the heart first ceased to beat it was felt that no further efforts would be of any use.

A "post-mortem" examination of the bile ducts and duodenum was carried out before closing the abdomen. An assistant then took this opportunity of practising cardiac massage, and twenty-nine minutes from the time that the heart first ceased to beat contractions were again produced; these continued. In a few minutes strong regular beats could be felt at the wrist, and peripheral circulation had been established. The abdomen was closed. Spontaneous respiration had not, however, been re-established, and artificial respiration was continued.

It was thought that prolonged cerebral anoxaemia had produced paralysis of the whole brain, including the respiratory centre in the medulla, and it was hoped that if an adequate circulation of oxygenated blood could be maintained for a sufficiently long time some degree of recovery would take place. Two and a quarter hours after the operation the first spontaneous respiration occurred. This was succeeded in five minutes by a second and then a third. At this time the patient showed complete flaccidity of all voluntary muscles and absence of all reflexes. The respirations were slow, gasping in character, and completely irregular.

Within an hour marked changes had occurred. The patient now presented the typical picture of decerebrate rigidity; the arms were flexed across the chest, with the wrists and fingers flexed; the knees were extended, and the ankles in the position of plantar flexion. The respiratory rhythm was now characteristic of that described by Lumsden as apneustic. The only further change in the patient's condition was that respiration later became more normal in rhythm. The man "died" eighteen hours after operation.

DISCUSSION

The opinion is generally held that restoration of cardiac rhythm can occur up to fifteen minutes after the heart has stopped. In the above case an interval of twenty-nine minutes elapsed. While this may be explained by assuming that cardiac massage itself can maintain some sort of circulation, the case does show that even more prolonged efforts should be made.

The recovery of the centres in the brain stem occurred in accordance with the known fact that the lower and more primitive centres show an increasing resistance to prolonged anoxaemia and, similarly, a more rapid recovery than the higher centres. Lumsden suggests that the respiratory centre can be divided into three sub-centres as follows: in the upper medulla just below the striae acousticae is the gasping centre; just above this is the apneustic centre, which is primarily responsible for the inspiratory movement; and, lastly, in the region of the upper pons is the pneumotaxic centre, which normally checks the activity of the apneustic centre and is responsible for the production of the normal respiratory rhythm. When an animal dies from asphyxia or from any interference with the blood supply to the brain stem these three parts of the respiratory centre suffer in turn in a descending order. Recovery occurs in the reverse order. This process of recovery was exactly demonstrated in our patient.

A similar ascending recovery was shown by that part of the central nervous system which controls muscle tone. At first the patient presented complete muscular flaccidity such as would be produced by transection of the medulla below the lateral vestibular nucleus of Deiters. Later the picture was that of section through the midbrain or pons above Dieters's nucleus and below the middle third of the red nucleus. No recovery of any centres above this level occurred.

I am indebted to the late Mr. J. L. Joyce for permission to publish this case.

Reading. GORDON L. BOHN, F.R.C.S.

Epanutin in Epilepsy

Epanutin (sodium 5:5-diphenyl hydantoinate), although a comparatively new drug, is evoking increasing interest among clinicians treating epilepsy. As yet, however, reports on its clinical trial are of necessity scanty. An account, therefore, of experience with this form of treatment extending over some months may be of interest.

The original claim of Merritt and Putnam (1938) that epanutin is of value in controlling major epileptic seizures seems to be undoubted. That it is the treatment of choice in all or most cases of epilepsy does not appear to be so certain. As with many other drugs exerting a powerful effect on bodily functions, epanutin has considerable toxic action. This, though not necessarily a bar to its use, necessitates care and watchfulness, and it seems unlikely that it will supersede, at present anyway, the more time-honoured treatment with luminal and the bromides for continuous general use. Already a number of toxic effects have been noted, ranging from nausea, vomiting, and epistaxis to various skin rashes, hypertrophy of the gums, and marked ataxic symptoms. This last complication is particularly dangerous, as it tends to come on insidiously after a considerable period, and may easily be thought by the unwary to be due to the epilepsy and therefore be taken as an indication for continuing the drug or even increasing the dose.

In the present series of cases toxic effects have been comparatively few, possibly because the dose used has not been large. Skin rashes of morbilliform type occurred during treatment in two cases. These cleared up on discontinuing the drug. One patient, unfortunately, started to have severe fits as soon as treatment was stopped and died within a week from status epilepticus, in spite of all the recognized forms of treatment. Such an event seems to be an indication for substituting other drugs before omitting epanutin. No cases of pronounced ataxia have occurred, but slight tremor of the hands and face has been observed, and numbness and tingling of the hands and feet have been complained of with some frequency. Transient nausea seems to occur fairly often, and constipation may be troublesome.

The initial dosage in every case was one capsule (0.1 gramme) three times a day, increased later to four capsules a day in a few instances. The number of fits was in most cases greatly reduced, some patients having no fits at all for long periods, but in a few cases little or no effect on the seizures was apparent.

Table showing Monthly Incidence of Fits before and during Treatment with Epanutin

Case	Month prior to Epanutin	Months of Treatment						
		1	2	3	4	5	6	7
A	8	0	3	0	2	4	0	1
B	23	1	1	2	12	0	6	6
C	19	0	0	0	23	5	6	—
D	10	0	0	0	0	0	0	—
E	27	7	0	0	1	0	0	—
F	4	8	7	8	7	18	—	—
G	21	1	0	4	3	2	—	—
H	5	2	3	5	—	—	—	—
I	9	0	0	0	—	—	—	—
J	1	3	4	—	—	—	—	—
K	4	2	0	0	—	—	—	—
L	2	0	2	0	—	—	—	—

In cases B and C the increase in the number of fits in the fourth month was due to a sudden exacerbation in spite of treatment. Cases F, H, and J are examples of failure to respond at all to the drug. In evaluating results it must be remembered that even cases of untreated epilepsy tend to show great variation in the incidence and periodicity of the fits, and that many factors, even, possibly, the change in treatment itself, may have some effect on the number of fits.

In those cases which responded well, however, marked improvement was noted in other spheres. Bodily and mental health were both improved, the latter possibly being associated with the absence of the soporific effect produced by such drugs as luminal and the bromides. This feeling of well-being was pronounced in a considerable number of cases—weight was gained, appetite improved, and zest for occupation increased. All these factors in addition to the diminution in fits are of great benefit to the patient. Therefore the conclusion arrived at is that although epanutin is possibly not the ideal drug in the treatment of epilepsy, it is nevertheless of considerable value in the control of fits and is well worth further trial in selected cases, especially where the treatment can be supervised. Further research along similar lines may well yield an even more suitable substance.

I wish to thank Dr. W. D. Nicol, medical superintendent of Horton Hospital, Epsom, for his kindness and permission to report these cases.

J. J. Laws, M.R.C.S., L.R.C.P., D.P.M.,
Assistant Medical Officer, Horton (L.C.C.) Hospital, Epsom.

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Reviews

EVERYDAY TREATMENT

Treatment of Some Common Diseases, Medical and Surgical. By Various Authors. Edited by T. Rowland Hill, M.D., M.R.C.P. (Pp. 398 ; 90 figures, some of which are in colour ; 3 tables ; 15s. net, postage 6d.) Edinburgh: E. and S. Livingstone. 1939.

Dr. T. Rowland Hill has collected a series of contributions by members of the staff of the Southend General Hospital on the methods of treatment of some of the common medical and surgical complaints, and the result is a book which will be valuable to practitioners. The range of subjects chosen is a wide one, and the method of approach is through a short reminder of the pathology of the condition under consideration. The volume is readable, the illustrations good and sufficient, and the book may be recommended as a sound statement of present-day therapeutics. A good start is made with two articles, on the treatment of angina pectoris and of heart failure, by Dr. William Evans, who summarizes his careful observations on the efficacy of various drugs and indicates the occasions for their use. The editor is responsible for two chapters on anaemia and on cerebral vascular disease. In the former he offers a classification which will be useful to practitioners in deciding the nature of the anaemia and so ordering the appropriate treatment. Cerebral vascular disease, in its different varieties common in infancy and in old age, tends to be overlooked in the early stages in the middle-aged when rest and treatment may bring about compensation. Pleurisy and the various types of broncho-pulmonary suppuration from catarrh to bronchiectasis are discussed by Dr. Sleigh Johnson. Dr. J. N. O'Reilly gives a useful sketch of the diagnosis and treatment of the commoner digestive disorders of childhood, preceded by a short but complete summary of the feeding of the normal infant, whether breast or artificial feeding is used.

Dr. L. T. Bond gives a fair summary of the present position of the prophylactic treatment of infective diseases by active immunization. At present there is rather a slump in vaccine therapy since the wave of optimism following the introduction of comparatively non-toxic chemotherapeutical compounds, and, as Dr. Bond points out, there is still a long way to go before it can be said that protection can be afforded against the majority of bacterial and virus diseases. Dr. R. H. Campbell deals with the treatment of haemorrhage from peptic ulcers on the lines advocated by Meulengracht, and points out that the initial nausea may often be overcome by persuading the patient to make a beginning with food, because once some food is retained the peristaltic action of the stomach tends to move on the blood clot and nausea ceases. Supporting intravenous therapy of one kind or another is so important that every medical practitioner should have available the material and apparatus for this immediate and life-saving measure when called to sudden and severe haemorrhages.

Among the surgical subjects the practitioner will find Sir William Wheeler's survey of the present position in regard to the management of enlarged prostate a most useful guide in advising and treating his patients, and Mr. Barlow's on suppurative lesions in the neighbourhood of the knee-joint and on infections of the face and neck, both of which if not dealt with adequately may bring about complications dangerous to life. Mr. Knight deals with head injuries and their complications, and Mr. S. G.

Mayer with post-operative complications of wounds in general. The problems of earache and dental caries as met with in general practice receive attention, and some common skin lesions. There are chapters on the management of delay in labour and of the various causes of abnormal uterine haemorrhage. Dr. G. White Phillips gives a short description of the effects of x rays on dividing cells. The dose must be above a certain minimum and varies for different cells; the approximate cancericidal doses are now known for certain malignant tumours. The methods of application and effects of treatment are discussed. Excision is the method of choice except in epithelioma of the lips and of the anterior third of the tongue. Excision must, of course, include the neighbouring lymphatic system. In inoperable cases radiation is the only form of treatment; the results of treatment by deep x rays in a number of cases with varied conditions are described and illustrated; unfortunately, injury of the skin and deeper tissues may occur; these effects, their treatment, and the sequelae are shortly indicated. Shock during anaesthesia and the means of meeting it and the newer methods of pre-anaesthetic medication are discussed.

In a notable article Mr. Wilfred Trotter makes a plea for earlier diagnosis of malignant disease of the pharynx. Though not common, its earliest symptoms are so mild, its advance so insidious, and its consequences so devastating that the practitioner is urged to take more notice of the complaints of patients with persistent throat symptoms; especially to learn the use of the laryngoscope, by means of which changes in the arytenoids may be seen or excluded; in the event of any suspicion of trouble expert opinion is to be sought. The details of treatment are explained and illustrated, but much will be gained if early diagnosis enables treatment to be instituted at a time which should at least ensure the level of success reaching that of any other cancer.

HEALTH ADMINISTRATION

Health Officers' Manual. General Information regarding the Administrative and Technical Problems of the Health Officer. By J. G. Geiger, M.D., Sc.D., LL.D. (Pp. 148; illustrated; 6s. 6d. net.) London: W. B. Saunders. 1939.

The medical graduate or licentiate, during the courses which he pursues in order to fit himself to hold a position as a medical officer of health, is required in this country to devote his attention to a couple of study groups, in the latter of which is included the study of health administration. This subject usually appeals to him as wide but vague, and, as an onlooker at this stage with no direct responsibility, he is apt to think administration an easy and not very urgent matter, a capacity for which he will develop automatically whenever the need arises. But when the need does arise and he becomes a medical officer, no longer a spectator but an active agent responsible for the health destinies of a community, he is likely enough to make the discovery that administration is not so easy after all, and so to welcome a guiding hand, especially if proffered by one who has competently trod the way before him. Such guidance is usefully made available to medical officers of health in a recently issued work by Dr. J. G. Geiger of San Francisco, who, adopting his own area as the pattern, exhibits the practical organization and interrelations of the manifold components of an important public health department. He believes in effective contacts between the health section and the other activities of the local authority. He thinks it well that the medical officer should be supported by an advisory board, so composed as to represent all significant local interests. He approves, also, of a technical advisory board, including medical men. Publicity is to him an obligation which he owes to the community, and he favours political relations if of a productive kind. Among many other topics aptly presented in the book are mental hygiene, the inspection of restaurants, hospitals, housing, camp sites, and the limitations of laboratory diagnosis.

GYNAECOLOGY AT JOHNS HOPKINS

Collected Papers by Members of the Gynecological Department of the Johns Hopkins Hospital and University, 1929-38. Volumes A and B. The Johns Hopkins Hospital. 1939.

The Johns Hopkins Hospital celebrated its fiftieth anniversary on May 7, 1939. On that day Dr. Thomas S. Cullen, professor of gynaecology, Johns Hopkins University, and visiting gynaecologist, Johns Hopkins Hospital, signed the preface to the two volumes of collected reprints of 122 articles which represent the published work of the department of gynaecology for the years 1929–38 inclusive. The addition of these volumes to the three existing ones makes a complete record of all the work published by the department since 1916.

"A father is proud of his sons and a surgeon may admire his own handiwork. Both are usually guilty of exaggeration," writes Dr. Lawrence Wharton at the beginning of an article in which he describes a new technique for constructing an artificial vagina (reprint 117). No exaggerated pride is revealed, however, by Professor Cullen in the simple preface to these volumes when he writes: "My affectionate regards and sincere thanks go to all members of the gynaecological staff for their admirable co-operation, their unflagging energy, and for what in these volumes they have added to our knowledge of gynaecology and abdominal surgery." The contributions that have been made by this department in the last ten years are very considerable, and for that reason the record made by the collected reprints is a valuable one. Novak, who must be regarded as one of the most eminent living authorities on gynaecological pathology and endocrinology, has contributed numerous papers on these subjects, with special emphasis on the clinical applications of advances in knowledge. His articles, which are always stimulating and a delight to read, have played a tremendous part in informing the profession, both in America and abroad, of progress made. They have also been an encouragement to other workers to continue in the search for truth. The epoch-making work of Hunner on the subject of the urinary tract has done much to draw attention to the important relationship that can exist between genital and urinary lesions, and his articles on ureteral strictures have been of the greatest importance to clinical gynaecology.

Space permits only of mention of other workers, such as Wharton and Richardson, whose contributions have been most valuable. One of the outstanding publications in the series is the article on "Lesions of the Rectus Abdominis Muscle simulating an Acute Intra-abdominal Condition" by Cullen and Brodel (reprint 106). It is certainly the classic in English on this subject, and is a model of how such a paper should be arranged and written. Many in this country will remember with great appreciation the address on "The Training of the Gynaecologist" read by Dr. Cullen to the Section of Obstetrics and Gynaecology at the Annual Meeting of the British Medical Association held at Manchester in 1929. They will recall that in his opinion "the finished product is (1) a man who has a good knowledge of general pathology and an intensive knowledge of gynaecological pathology, (2) a man with a comprehensive knowledge of gynaecological and abdominal diseases, (3) an expert gynaecological and *abdominal* surgeon, (4) a surgeon who has formed the habit of looking at his cases from every viewpoint."

The collected papers of men who are the products of such a system of training are a glowing tribute to the way in which Dr. Cullen's ideals are achieved in practice. It is fitting that these volumes should be concluded by a record of the testimonial dinner given in honour of Dr. Cullen on the occasion of his seventieth birthday, a dinner at which tribute was paid by a gathering of 480 guests to a great gynaecologist, an inspiring and generous leader, and a man whose genius is excelled only by his humanity.

RELIEF OF PAIN

The Relief of Pain: A Handbook of Modern Analgesia. By Harold Balme, M.D., F.R.C.S., D.P.H. With an Introduction by Sir E. Farquhar Buzzard. Second edition. (Pp. 399. 12s. 6d.) London: J. and A. Churchill. 1939.

From time to time books appear dealing with a particular symptom and its treatment, and may be snapped up, perhaps too readily snapped up, by the busy practitioner who hopes he has found an easy road to therapeutic reputation. Too often he is disappointed, because symptomatic treatment can never be really satisfactory. That a second edition of this book has been called for in two and a half years shows that it has met a demand. It has certain merits that no doubt account for this. While comprehensive it is brief, making no attempt to enter into an erudite discussion of the whole of medicine; it from first to last insists that removal of the cause must be the only satisfactory way of removing pain, and it is well documented with plenty of references to facilitate further study. It will, of course, meet with criticism: the specialist reads such a book and finds it admirable in all specialties except his own, where he regards it as incomplete and insufficiently critical, and that, of course, is its danger. In bringing it up to date the author is forced to accept statements of enthusiastic supporters of some new surgical or pharmacological procedure which has not yet stood the test of time. Nevertheless this new edition is to be welcomed as a book of reference and as a stimulus to critical experiment in the use of various methods to give to the patient what he most craves for—relief from pain and suffering, whatever may be their cause. An excellent chapter is contributed by Miss Houghton on the nursing of pain.

BACTERIOLOGY

The Anaerobic Bacteria and their Activities in Nature and Disease. A Subject Bibliography. Volume I: Chronological Author Index. Volume II: Subject Index. By Elizabeth McCoy and L. S. McClung. (Pp. 295 and 602. 50s. net for two volumes.) London: University of Cambridge Press. U.S.A.: University of California Press. 1939.

Bacteria: The Smallest Living Organisms. By Dr. Ferdinand Cohn. Translated by Charles. S. Dolley. Introduction by Morris C. Leikind. (Pp. 44; 4 figures; frontispiece. 1 dollar.) Baltimore: Johns Hopkins Press. 1939.

Elizabeth McCoy and L. S. McClung have performed an unusual and valuable service to the science of bacteriology in compiling two large volumes entitled *The Anaerobic Bacteria and their Activities in Nature and Disease. A Subject Bibliography.* The material on which these volumes are based consists of about 10,500 separate references to original publications on this large subject. In the first volume these are arranged chronologically and alphabetically under the names of their authors; in the second they are very fully classified according to the aspect of the subject with which they deal. This elaborate and convenient method of presentation expands the original material into no fewer than 120,000 entries. The authors declare their intention of publishing further supplementary volumes in the future which will bring the publication up to date if the demand justifies this. Anyone seeking complete information from original sources on any matter within the scope of this compilation will have cause to thank the authors for making the task so easy.

A paper by Ferdinand Cohn published in 1872 entitled "Uber die Bacterien, die Kleinsten Lebenden Wesen" was translated and republished by Dr. Charles S. Dolley, then of the University of Pennsylvania, in 1881. This translation, together with brief biographical notes on the author and translator, has now been republished, and forms a useful addition to the few classical early papers on microbiology now made more easily accessible. Cohn's grasp of the significance of the subject was highly enlightened for that time, and among the ideas he puts forward is the possibility that life originated on the earth by the interplanetary transference of bacteria, a not impossible conception which was seriously discussed half a century after he wrote these words.

Notes on Books

Sir Edward Mellanby, Secretary of the Medical Research Council, delivered at Cambridge, on April 28, the Robert Rede Lecture, taking as his subject "Recent Advances in Medical Science: A Study of their Social and Economic Implications." An abridged version of this lecture appeared in the *Journal* of May 13 (p. 996). The lecture itself has now been published in full in booklet form (Cambridge University Press, 2s. 6d.). It concludes with these words: "There is no limit to the amount of knowledge to be gained if the medical scientist is given the opportunities and facilities for his work. Would that the same could be said about the wisdom necessary to make the best use of this knowledge!"

Comparative Studies Concerning the Strengths of Oestrogenic Substances by Dr. K. Pedersen-Bjergaard of Copenhagen is a monograph of 198 pages which gives an account of extensive experiments carried out by the author on the biological standardization of oestrogenic compounds. One of the chief problems dealt with is the reason for the prolonged action by esters of the type of oestradiol benzoate. The author concludes that the duration of action depends on the rate of absorption and produces evidence to show that oestrogenic substances after they have entered the circulation are inactivated fairly rapidly by the liver. The book is published in this country at 15s. by the Oxford University Press.

Income Tax Simplified, by Arthur Fieldhouse and E. Ewart Fieldhouse, sixteenth edition (Simpkin Marshall, 1s. 6d.), is intended to serve as a practical guide to the preparation of income tax returns, claims to repayment, etc., and to assist taxpayers not only to comply with the provisions of the income tax statutes but also to see that they receive the benefit of all the allowances and reliefs to which they may be entitled. Considerable trouble has been taken to supply helpful illustrations, and heavy type is freely—rather too freely—used to give emphasis to the points discussed. The general form lends itself perhaps rather to the use of examination students than to the convenience of taxpayers concerned with their own problems, but it is a clearly condensed statement of the essential features of the tax, and as such is good value for the price charged. The section dealing with partnership profits is less clear in explanation than might be wished. The statement that "when the capital of partners, their salaries or their share of profits are unequal . . . the tax should be deducted from the interest on capital, salaries, and profits" will puzzle some readers. The facts, of course, are that there is no "deduction" of tax; the most convenient method is for the assessment to be divided between the partners as if it were a divisible profit and the tax on each portion calculated and in aggregate agreed with that shown in the firm's assessment; each partner can then pay his share, either separately to the collector or into the firm's account if the firm as such pays the total tax assessed. The publication has been brought up to date, and though the explanations are necessarily brief they cover the whole field, including the assessment of tax on property, firm profits, salaries, etc.

Preparations and Appliances

IMPROVED METHOD OF ADMINISTRATION OF VINESTHENE IN DENTAL SURGERY

Dr. K. B. Pinson, Mr. R. Bradbury, L.D.S., and Mr. E. B. Jones of Manchester write:

During the past two years, at the Stretford Council Dental Clinic, we have been using vinesthene in conjunction with nitrous oxide and oxygen administered nasally from a modified Clarke's apparatus. The vinesthene is injected into the rebreathing bag from a 10-c.cm. Record syringe, and is used to (1) deepen the anaesthesia, and (2) reinforce the action of N_2O and O_2 so as to render this form of anaesthesia suitable for very young children. To do this the vinesthene has to be given slowly, after induction with N_2O and O_2. The chief difficulty experienced is that salivation is increased, which sometimes makes the patient cough or is otherwise troublesome. Another objection sometimes raised is that 6 c.cm. of vinesthene may be required. Otherwise the method is a very satisfactory improvement on ethyl chloride, owing to relaxation of the jaw and absence of vomiting, factors which render vinesthene the safer anaesthetic.

We decided to use vinesthene alone for short anaesthesia in the manner that Goldman has described. The anaesthesia was found to be good, but the manner of induction was unsatisfactory. It was difficult to get children of 3 to 4 years of age to co-operate by inflating the rebreathing bag, which was removed on inspiration and put back over the child's face for expiration, as recommended by Goldman. An ordinary type of N_2O three-way cock made with a wide neck and no inlet pipe was used, with a 1½-gallon rebreathing bag which was turned inside out after each case so as to permit of thorough cleansing.

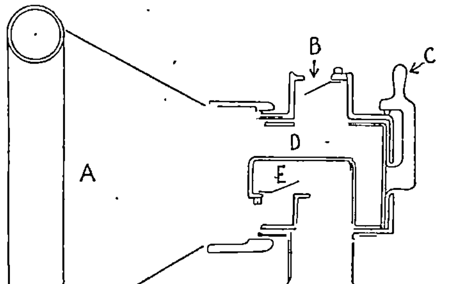

Fig. 1.—Diagram of altered cock. A. Face-piece. B, Valve for inhaling air. C, Cock lever. D, Cock. E, Valve for exhaling into bag. F, Bag-holder. G, Reversible bag.

It appeared to us that it would be advantageous if the mouth-piece could be left on the child's face during the complete respiratory cycle, so that the child could breathe in from the air and expire into the bag until it was filled. It would also help to gain the confidence of the child, since no anaesthetic would be given for the first half-minute or so. For this purpose we designed alterations to the existing valves, as shown in the accompanying diagram, from which it will be seen that (1) the expiratory valve is reversed, and (2) the inspiratory valve inside the cock is similarly altered by a built-up addition with a reversed valve flap so that on expiration the breath is directed into the bag, while inspiration is taken from the outside air.

METHOD OF INDUCTION

The face-piece is held gently on to the face. The lever on the cock is placed at the position marked "valves" until the bag is partly filled with expired air. It is then moved over to "to and fro" position, which allows inspiration from and expiration into the bag. Three c.cm. of vinesthene is then injected through a side tube in the bag-holder. The syringe is then removed to prevent breakage should the child try to knock the bag away. Neither N_2O nor oxygen are added. The apparatus is held on for sixty seconds, after which time complete dental anaesthesia is obtained, which lasts for about fifty seconds. We have found that the cock thus altered is a real improvement, and decidedly easier to use. Reversing the bag each time, too, gets rid of the smell of the anaesthetic, and little children are not upset by it.

In our experience this method has proved entirely satisfactory, and has enabled us to rely in most cases on the administration of vinesthene alone without the preliminary induction by nitrous oxide and oxygen.

The apparatus will be made by the Condensed Gas Co., Ltd., Rusholme, Manchester, 14.

THREE-WAY AUTOMATIC ADAPTOR FOR RECORD SYRINGE

Dr. I. David (Colombo) sends the following account of a three-way automatic glass adaptor manufactured for him by Adair Dutt and Co. of London.

Before the blood is drawn into the barrel of the syringe see that the valves move with each stroke of the piston. Air must be driven out if necessary by first filling the syringe with citrate solution or normal saline before the blood is drawn in. Even with a good syringe air will be sucked in unless the piston is worked slowly and steadily. Of course, every part must be airtight—namely, the piston, rubber tube connexions, nozzle, and the mount which receives it. It is better to hold the adaptor firmly against the nozzle of the syringe lest the former should drop down and break. I do not recommend a syringe of a larger capacity than one of 20 c.cm. I prefer a 5 c.cm. all-glass syringe, as I am of the opinion that in a smaller syringe there is not much chance of blood clotting or air entering. The adaptor is also useful for various other operations such as infusion, aspiration, and douching of cavities such as ear, nose, and vagina, and is also useful in administering glycerin and other enemata.

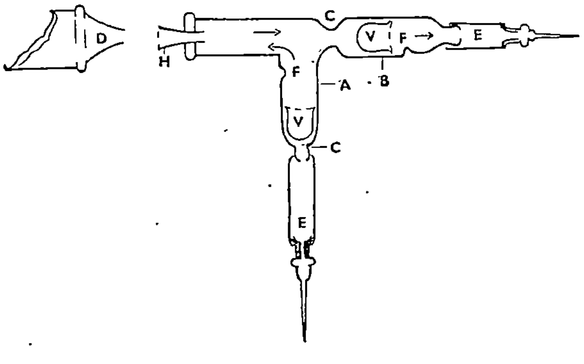

Fig. 1.—A, Aspirator or suction limb; B, injection or delivery limb; C, valve seat, which is closed by the valve V when in action; V, cup-shaped valve which acts in one direction only; D, nozzle of a Record syringe; E, rubber tubing; F, knob which prevents valves from closing delivery openings; H, removable metal mount to be taken apart when sterilizing.

A BLOOD TRANSFUSION DEPOT AT WORK

The experience of air raid casualties in the Spanish civil war showed that at least 10 per cent. were of a serious character requiring blood transfusion. With this in mind, as the international situation worsened, it was considered imperative in this country to organize a scheme for the empanelling of volunteers and the withdrawal, storage, and rapid distribution of blood for the large number of transfusions which might be necessary should air attack develop on a large scale. Four depots were accordingly equipped for the supply of the hospitals in London and the surrounding areas. A recent visit to one of these was instructive, and illustrated once again what brilliant improvisation the war emergency has evoked.

The depot, which is housed in the country at a social centre, is under the direction of Dr. Janet Vaughan with a staff of four or five other medically qualified persons, most of whom have had a large amount of experience in haematological technique. The staff includes also five non-medical technicians, and there is always a trained nurse in attendance to look after the donors. The depot is now open from 8.30 in the morning until 10 at night, and one of the medical officers sleeps on the premises to be ready for any emergency call.

Method of Organization

The organization of this effort began with the enrolment and testing of volunteers, originally at the town hall, as long ago as last Easter. The volunteers are mostly workers in the factories which abound in this area. Addresses to factory workers were given by the medical director of the depot, and the response was all that could be desired, both men and women coming forward with quite extraordinary willingness. Immediately a state of war was declared a large number of universal donors—healthy persons—were called upon, and bloods were withdrawn and stored in an ice house ready for dispatch to any hospital on demand. Up to the time of writing the only calls have been for transfusion for ordinary sick or accident cases, but there the organization is in readiness, as at other points in the home counties, should air raid casualties occur.

The panel of donors now numbers some 15,000. The mere card-indexing of such a number would be regarded as a very serious business indeed for the average city office, but in this depot they seem to take it in their stride. The enrolment form states the name, address, and business and private telephone number of the donor, whether he is under any national service obligations which might interfere with his availability, what is the general state of his health (whether, for example, he suffers from malarial attacks), and particulars of any recent serious illness. Then there is added on to the card the blood group, and, what is of less importance, the character of the arm veins. Each card is afterwards stamped with a serial number, the date on which the blood was taken, the quantity, and the result of the Kahn test. The serial number is also indexed on a separate card and appears on the bottle labels. It is considered an advantage to keep blood of all groups, and the different groups are indicated by differently coloured cards, blue cards for the universal donors.

The Human Element

The cheerful atmosphere of the main hall, with the couches, each lightly screened, not preventing conversation between the occupants while waiting or resting, possibly accounts for the fact that, notwithstanding the large numbers that have been dealt with, so few mishaps of any kind have occurred. A few donors have exhibited a transient faintness, evidently a psychological condition, and quickly combated by restoratives at hand. It was mentioned that of those who do faint almost all are men! Hardly any accident has been experienced, none at all of any seriousness, and some of the donors have professed themselves feeling better for what has been done to them, and have even intimated a desire to come back before the stipulated minimum interval (a month) to undergo it again.

The trolleys beside each couch are of standard pattern. Good lighting is provided, and bleeding takes place under strictly aseptic conditions. A sphygmomanometer cuff is put on and a steady pressure of 80 mm. Hg maintained. An anaesthetic, 2 per cent. novutox, is used, which has the advantage of being self-sterilizing. A neat appliance is a standard towel of unbleached calico, with a button slit which can be placed over the antecubital fossa in such a way as to make only one towel necessary instead of the usual two. That again is an idea adapted from the Spanish civil war. Another happy notion is the shape of the bottles in which the blood is collected for storage. They resemble pint milk bottles, but they have been given a special waist so that they never slip from the hand in spite of constant use.

Storage and Distribution of Blood

After the blood has been withdrawn and carefully tested for sterility the labelled bottles are packed in sliding wicker crates similar to milk crates, each containing twelve bottles, and kept in a large ice house, the temperature of which is between 2° and 4° C. One appearance which at first caused some misgiving was a scum which formed to a varying extent on the top of the stored blood, but the most rigid examination has proved that it is not due to any contamination; it seems to be partly fat and partly protein. Each bottle contains about 500 c.cm. of blood. The depot includes well-equipped sterilizing rooms with stills for distilled water and three large autoclaves which look somewhat primitive, but function excellently. In the little laboratory regroupings and Kahn tests are carried out—it was stated that there have not been many positive tests, fewer indeed than 1 per cent.—and advantage has been taken of the quiet time to do a certain amount of research. The fragility of the red cells in the stored blood has been investigated, and a complete haematological study of the blood from the day it is taken until the thirtieth day, when it is destroyed, has been made.

The bottles which are sent out on demand carry a label which it is requested shall be filled in by those superintending the transfusion and returned with the empty bottle. This label gives the date on which the blood was taken, and the completed particulars will furnish the date on which it was used, the reason it was needed, the name of the patient, any information as to clots or haemolysis, and the result of the transfusion. The label reads as follows:

> O Group IV
>
> Citrated Blood for Transfusion
>
> Mix without undue shaking and stand the bottle in warm water (not more than 40° C) for 15–20 minutes before use. Rotate occasionally. Use before (insert date).

The blood is sent to the hospitals in vans equipped with refrigeration plant, and as an example of how details have been thought out it may be mentioned that every hospital likely to be served has been routed, and the typewritten direction sheet is handed to the driver of the van. This is not the place to discuss the scientific results of the use of stored blood, but the war experience is resulting in a great deal of useful information which will be forthcoming at the proper opportunity.

Erythrogenic Toxin.—A method is described for preparing the erythrogenic toxin of *Streptococcus pyogenes* in very high concentration and a state "approaching" purity. It depends on the use of a broth which has diffused through cellophane, and the subsequent elimination from the culture of all the original constituents of the medium by the same process.—Studies on Haemolytic Streptococcus: I. Isolation and Concentration of Erythrogenic Toxin of NY 5 Strain of Haemolytic Streptococcus. II. Experimental Use of Purified Erythrogenic Toxins in Immunization against Scarlet Fever. M. L. Menten, H. H. Finlay, and A. H. Stock.—*J. Immunol.* June, 1939, **36**, 489.

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A HISTORY OF TROPICAL MEDICINE

By writing his two volumes on the history of tropical medicine[1] Dr. Harold Scott has put many people in his debt; other medical historians, students interested in special diseases or in the health reforms effected, or in the strenuous lives he has chronicled, will consult his work. Their object in doing so may be to amend perhaps, more probably to amplify, most probably to borrow, but they will consult it. Of the Navy and Mercantile Marine, and the care and treatment given to the personnel, Dr. Scott writes:

> "The old-time naval surgeon excused himself for doing nothing, or perhaps we should say, justified his expectant treatment, by the conviction that 'two-thirds had such bad constitutions that no physician could save them, and the rest such good ones that all the physicians in the world could not kill them.' Sickness, moreover, was not encouraged. A man taken ill on board, if he did not speedily recover, was put on shore and treated for a month. If he was incurable or was permanently disabled, and was not one of the fortunate few to obtain admission to Greenwich Hospital, he was callously turned adrift to shift as best he could for himself."

The spread of knowledge with regard to the prevention of scurvy seems to have been an elaborately slow process among the higher authorities responsible for the health of sailors. In 1740–4 Lord Anson made a voyage round the world—"one of the most disastrous voyages in history." A note of the scurvy on two of the ships is given:

> "The havock which this dreadful calamity made in those ships was truly surprising. The *Centurion* from her leaving England, when at this island (Juan Fernandez) had buried 292 men and had but 214 remaining of her complement. The *Gloucester,* out of a smaller complement, buried the same number and had only eighty-two alive."

Yet we read that from the year 1600 onwards the East India Company had been quite cognizant of the prevention of scurvy by the use of oranges and lemons, and that these had been carried on board as part of the regular supply. Time brings its changes. In 1827 Goethe could write to Eckermann:

> "It is absolutely indispensable for the United States to effect a way through from the Gulf of Mexico to the Pacific Ocean, and I am certain they will compass it. This I should like to live to see, but I shall not . . . lastly, I should like to see the English in possession of a Suez Canal."

Goethe could no more forsee the difficulties of the Panama enterprise than could Lesseps himself. Neither of them suspected the dangers hidden in those pestilential swamps. None knew how many workers were destined to spend an all too brief existence there, scratching their innumerable insect bites, only to die miserably in the end from malaria and blackwater fever or yellow fever conveyed through these very bites. No wonder that the first undertaking, conceived in such complete medical ignorance, born and nurtured in an atmosphere more than a little tainted by commercial fraud, came to an end in bankruptcy. We are little surprised, the story of the failure having been told, when we read concerning Lesseps, the triumphant creator of the Suez Canal, that he became almost insane as a result of the fiasco of Panama.

The lower animals, invertebrate and vertebrate, play a remarkably large part in the dissemination of tropical diseases. Man is emerging more and more in the light of a casualty from accidental infection. He has often intruded into a cycle of animal disease which was going on before he arrived on the scene, and which will doubtless go on after he has disappeared from it. The skin of the tarabagan, *Arctomys bobac,* may have some value, but hardly enough to make it worth while running great risks on its account. Yet Scott relates that the Manchurian epidemic of pneumonic plague in 1910, which caused the death of 42,000 people, was due largely to the excessive zeal, coupled with the inexperience, of newcomers to the growing industry of hunting and skinning these animals. The old hands knew that sickly and dead animals should be left alone or dangerous illness would follow. Yellow fever, until only a few years ago, was accepted as a man—*Aëdes-aegypti*—man disease confined to the littoral of endemic regions. It is now found to be a widespread endemic of inland rural areas where *Aëdes aegypti* cannot be found—conditions the very reverse of the classical optimum, "a dense population, in a seaboard town, with abundant *Aëdes.*" Further, there is evidence that monkeys and possibly other animals may contract and recover from yellow fever. Malarial parasites morphologically indistinguishable from those which infect man have been found in chimpanzees, and desultory experiments are going on to discover whether or not they can infect man. It is held by some workers that the louse-borne virus of epidemic human typhus originates in an endemic typhus carried from the rat by its fleas. Rats are the reservoir of infectious jaundice and several human diseases. We have come to look upon American trypanosomiasis as normally a disease of various animals and tularaemia as a disease of rodents. Rats and their kind have indeed much to answer for to the human race.

It is of interest to try to follow the processes by which any great discoveries come to be made. Does the investigator, in the midst of his daily routine work or during his scant leisure time, find himself suddenly struck dumb at the moment of some divine inspiration? Here Dr. Scott helps us greatly in so far as the notable discoveries of tropical medicine are concerned. The divine inspiration theory will not bear long inspection, and certainly dumbness has never proved a prominent characteristic of discoverers. Sad though it may appear to the worshipper of heroes, it is nevertheless true that every discovery described in these volumes was preceded by a long prodromal period. During this time vague hypothesis had given place to a well-defined theory and even, in some cases, to well-planned experimental work which was within an ace of attaining success. There are many instances. Let the reader peruse, under the guidance of Dr. Scott, the history of yellow fever, and he will not be surprised that the names of Nott, Beauperthuy, and Finlay find honourable mention along with those of Reed, Carroll, Lazear, and Agramonte, and with those of Noguchi, Stokes, and Young of later years. Juan Carlos Finlay of Cuba enunciated his mosquito theory of the transmission of yellow fever at the International Sanitary Conference in Washington in 1881. He had already carried out experiments in which he had fed *Aëdes* on infected persons and then, at too short an interval as it turned out, on non-immunes. Or let him consider African trypanosomiasis. It was in 1895 in Zululand that Bruce discovered that the disease "nagana" of domestic stock was a trypanosomiasis transmitted by the tsetse fly. Now Livingstone, as far back as 1857, had frequently mentioned the fly, and specimens of *Glossina morsitans* had been brought to England and figured. Of the tsetse fly Livingstone wrote: "It is well known that the bite of this poisonous insect is certain death to the ox, horse, and dog." Trypanosomes in the blood of rats had long been known through the work of Lewis, and Griffith Evans as early as 1880 found them in the blood of horses and camels affected with "surra." Delafield, writing on malarial fevers in 1872, is quoted by Scott: "We find that the most constant lesion is the presence of little particles of black or reddish pigment in the blood. The pigment is in the form of flakes or of granules embedded in small, irregular, transparent, finely granular bodies. We also find the same transparent bodies without pigment." It remained for Laveran in 1880 to prove that the "transparent, finely granular bodies" were the cause, as well as "the most constant lesion," of malaria. Forde observed, then Dutton recognized and described, in a case of sleeping sickness the trypanosome called by him *T. gambiense*; but they did not associate the parasite with the disease. Bruce, Castellani, and others studied sleeping sickness but did not at first associate it with the trypanosome *T. gambiense*, which they also found.

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[1] *A History of Tropical Medicine. Based on the Fitzpatrick Lectures, 1937–8.* By H. Harold Scott, C.M.G., M.D., F.R.C.P. Volumes I and II. London: Edward Arnold. (50s.)

It is because many people have usually had a hand in the making of a "discovery" that it is so difficult to allocate the just praise for it with any precision; this difficulty is well brought out in Scott's account of his historical research. Claims to discovery are apt to be not unlike the claims to have been instrumental in winning the battle of Waterloo. There are probably numbers of Bill Adams in all branches of scientific work; certainly tropical medicine has had its share. The discoverer is the man who puts two and two together; it is only by reading the history of most discoveries that we learn of the previous existence of the two and two. This explains many of the controversies between the supporters of Manson, Ross, Grassi, Bignami, and others concerning the discovery of the transmission of malaria and the mosquito theory. It explains the fact that ". . . France ascribed it to Laveran in 1891, Germany to Koch and Pfeiffer in 1892, England to Manson in 1894, Italy to Bignami and Mendini in 1896, and, not to be outdone, or thinking perhaps that numbers would make up for loss of priority, to Grassi in 1898." It accounts also for the many similar controversies on yellow fever, trypanosomiasis, and other diseases.

Lest any prospective reader should fail to obtain this book on the excuse that the particular disease in which he is interested may not find a place in it, the following are the contents: malaria, blackwater fever, yellow fever, human trypanosomiasis (African and American), leishmaniasis (kala-azar and cutaneous leishmaniasis), leprosy, cholera, plague, undulant fever, relapsing fever, melioidosis, dengue, amoebic dysentery and hepatitis, ankylostomiasis, beriberi, epidemic dropsy, pellagra, scurvy, poisonous foods—for example, from akee (*Blighia sapida*)—and ginger paralysis resulting from adulteration of ginger with triorthocresyl phosphate. Probably it is demanding too much, when a writer has expended so many laborious hours in research on his subject, that any reader should ask for still further efforts on his part. But there remain several diseases of the Tropics besides those dealt with in these two volumes which merit consideration on similar lines. Could Dr. Scott be persuaded to take a very deep breath and plunge into it once more?

"THE FOURTH ARM"

That finance is "the prop that sustains the whole of our war effort" is a truism that this country has successfully acted on in the past, and will have to bear very clearly in mind during the coming days of trial and strain. In this field of activity as in others the dearly bought lessons of twenty-five years ago are being restudied so that mistakes may be avoided and the country's maximum effort brought to bear on the issues of war at the earliest opportunity. This acceleration is noticeable in the promptitude with which steps are to be taken by the Revenue authorities to initiate an Excess Profits Tax, so that those whose businesses are so circumstanced that they become more profitable in time of war shall make special contributions to the Exchequer. The equity of such a demand will in general be conceded readily enough; the difficulty is that in so many cases the absence of a reasonably good standard of profits in recent years is apt to cause individual hardship. Various modifications are, however, provided which will apparently ensure at least "rough justice" in such cases. What is perhaps more important to the general public is that the tax should not operate as its forerunner, the Excess Profits Duty of the last war, too often did to make employers careless and uneconomical in the conduct of their businesses, with the result that waste and rising costs affected adversely the general level of prices and reduced the purchasing ability of the public. In that, as in other aspects of finance and industry, the ultimate safeguards lie in the good sense and patriotism of the nation, and an early realization of that fact should avoid disappointments in the future. In the meantime no reliable estimate can be made as to the probable yield of this tax; but excess profits are apparently the inevitable accompaniment of war conditions, and if they cannot be avoided at least they can be specially taxed.

So far as the income tax payer is concerned, Sir John Simon's demands for the current financial year have exceeded general expectation. The corresponding War Budget of 1914 raised the standard rate of tax from 1s. 3d. to 1s. 8d. The contrast between those figures and the present increase from 5s. 6d. to 7s. is an eloquent commentary on the difference in our general fiscal condition and on the sacrifice which taxpayers are to be called upon to undergo. The special provision for the relief of those taxpayers whose earnings have fallen as a result of the war will in some cases be very welcome, but the prospect of having to meet the increased demand in three or four months' time is a very serious matter for all of us. The indirect taxpayer is also required to contribute by increased taxes on beer, wines and spirits, on tobacco and on sugar—the last, the only increase in an involuntary indirect tax, is made avowedly so that no citizen, however humble, should escape some special contribution to the national needs. Of less immediate interest but of perhaps even greater ultimate importance is the Chancellor's foreshadowing of Government policy with regard to loan finance. The Empire's premier security—the loan issues of the British Government—set the level of the yield of trustee stocks, and thereby have a powerful influence on interest rates generally. Consequently a rise in the rate of Government interest not only affects the Exchequer directly but by its secondary results increases the cost of financing the running of a business, the acquisition of a practice, etc., and imposes a check on enterprise which is prejudical to the national well-being. It is to be hoped that when the Government applies to the people for subscriptions to a War Loan the rate of interest can be kept at a moderate level, and no doubt it was with that in view that the Chancellor referred to the further duties which citizens would be called upon to fulfil if the evils of inflation were to be avoided.

It is obvious that the nation must contemplate expenditure on a scale without precedent even in the last war, and it is almost equally obvious that the necessity and the accompanying obligation to meet it so far as possible by taxation of current income will be accepted, but only on one condition—namely, that waste shall be avoided or at least quickly detected and firmly and immediately eliminated. In that connexion Sir John Simon's appointment of "Treasury watch-dogs" to the spending Departments is a step in the right direction and should lead to good results. Some waste of money and effort is inseparable from so sudden and so immense an expansion of Government activity; but it must be kept to the irreducible minimum. If taxpayers feel that they are reasonably safeguarded in that respect they can be relied on to play their part to the end.

OPERATIVE ASEPSIS

We have referred on previous occasions to papers by Hart of Durham, U.S.A., on the prevention of infection in operation wounds. His belief is that operation sites, especially when extensive and long exposed, as in thoracoplasty, are liable to be contaminated by bacteria in the air, especially staphylococci. The method he proposes for preventing this is to expose the site and its surroundings to bactericidal light from a special mercury-vapour lamp, and the adoption of this precaution has actually led in his hands to a marked decline in the frequency of wound infections. In two further papers[1] he now describes experiments illustrating the bactericidal capacity of light from this lamp, and furnishes evidence, obtained by studying the healing of experimental wounds in rats after exposure to the lamp, that the reparative powers of various tissues remain unimpaired. This might appear to be the end of the story, and conscientious surgeons might feel obliged to install what is doubtless an expensive piece of apparatus in order to safeguard their patients against the risk of accidental infection. Nevertheless there is a flaw in the argument; as we have pointed out before, Hart's exhaustive studies do not explain how pathogenic staphylococci get into the air of his theatre in spite of all his earlier precautions. These included not only the frequent washing of the room, the provision of filtered air, the wearing of "large heavy" masks by all occupants (whether an operation was in progress or not), the exclusion of staphylococcus throat carriers, but even the imposition of silence on all occupants. Any one of the last three of these measures, faithfully carried out, might be expected to prevent contamination of the air from the throats of the theatre staff; yet according to Hart this was the source of infections which continued in spite of adopting all of them. He considers and rejects the possibility that their source is the patient's own skin, but an alternative not discussed in his papers is their origination from the skin of the surgeon. This is nevertheless the explanation arrived at by Devenish and Miles[2] after investigating the circumstances of a series of infections in clean operation wounds at University College Hospital. The wholesale exposure of agar plates in the theatre led in the first place to the conclusion that the average rate of fall of particles containing *Staphylococcus aureus* on an exposed surface with an area of 12 square inches was about 0.3 per hour, obviously an almost negligible risk. Comparison with Hart's original data on this point[3] is difficult because his results are very variable (from *nil* to fifty-one colonies per plate per hour), and since the majority of the staphylococci recovered were "non-haemolytic" and other tests more indicative of pathogenicity were not applied to them it is doubtful how many of them were in fact pathogenic. The task of Devenish and Miles was made easier by the fact that most of their unexplained sepsis followed operations by a particular surgeon. He was found to be a skin carrier of *Staphylococcus aureus,* and large numbers of these cocci were found in the sweat inside his gloves; they are presumed to have reached operation wounds through small perforations in the glove, and perhaps the most disturbing feature of this inquiry is the observation, based on the examination of some thousands of gloves, that the frequency of glove puncture during operation is 24 per cent., and remains as high as 14 per cent. in spite of precautions to avoid it. That this is the true explanation of this particular series of wound infections there can be no doubt, and it is so much more credible than Hart's hypothesis that one is tempted to grant it a more general application. If Hart is wrong about the source of infection in his cases but right about the beneficial action of his lamp, does this lamp actually kill staphylococci in the wound itself? This is a matter which it should be fairly easy to investigate, but in any event the next word lies with him.

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[1] *Arch. Surg.*, Chicago, 1939, **38**, 797, 806.

ABORTION FROM CANCER SERUM AND URINE

Interesting observations on a selective action of urine and serum from cancerous patients on embryonic and newly growing tissues have recently been reported by Elsasser and Wallace[4] of New York. Their first observation was that the urine of a man suffering from an embryonic carcinoma of the testis gave a positive Aschheim-Zondek reaction, and daily intravenous injections of the urine into a twelve-day-pregnant rabbit produced abortion on the fifth day. Urine from other patients with tumours of embryonic type and from "a large number" of patients with other kinds of malignant tumours always caused abortion, usually within five days. Blood serum had the same effect. Urine or serum from "a considerable number" of normal individuals and hospital patients without tumours did not bring about abortion, nor did the urine of pregnant women. Cancer serum and urine caused a progressive necrosis, associated with filtration of inflammatory cells, in the placenta; in non-pregnant female rabbits the Graafian follicles degenerated or were destroyed, and the ovaries became small and sclerotic; in male rabbits the testis degenerated or spermatogenesis was suppressed. Cancer urine also gave rise to necrosis of a transplantable rat carcinoma; the necrosis started at the periphery and involved newly formed blood vessels as well as cancer cells. The substance responsible for these effects has not been identified. The authors did not advocate the use of these reactions as a diagnostic test for cancer, but the May issue of the *National Bulletin of the American Society for the Control of Cancer* states that the paper has been given widespread publicity, including mention on the front page of the *New York Times,* and that the society had therefore issued a cautionary notice. This refers to the bad reputation of serum tests for cancer, and states that the abortion test seems to have been employed only on cases where cancer was known to be present and had been diagnosed by other methods. Thorough investigation must precede the recognition of diagnostic value. Apart from their possible use in diagnosis, the reactions, if substantiated, will be important in the study of malignant processes. Independent confirmation and extension of the observations will be awaited with interest.

DISSOCIATION OF TUBERCLE BACILLI

Though by suitable cultural and animal inoculation methods mammalian tubercle bacilli can usually be divided into human and bovine types, occasional exceptions are encountered, the classification of which presents certain difficulties. Dr. Frimodt-Möller[1] has made a special study of these aberrant strains with particular reference to variations they may undergo in the laboratory, and has succeeded in showing that true, as opposed to mere environmental, dissociation may occur with the production of stable variants differing in cultural properties and sometimes in virulence from the original strain. The strains with which he worked were derived from human tuberculous material by cultivation on Jensen's modification of Löwenstein's medium containing 0.75 per cent. glycerin. It is believed that this strength of glycerin is insufficient to inhibit the growth of bovine but sufficient to stimulate that of human type bacilli. Twelve primary dysgonic human strains gave off in culture stable eugonic variants, while 39 other strains of human type, which were less eugonic than usual on primary isolation, failed to do so. Thirteen typical dysgonic bovine strains were examined. Of these, five formed eugonic variants of full virulence, and six formed eugonic variants of attenuated virulence, which, however, reverted to full virulence on a single animal passage. The remaining two strains were of special interest in forming eugonic variants which were completely and persistently avirulent, resembling in this respect the B.C.G. strain. Dissociation appeared to be favoured by acid in the medium, but to be more or less independent of glycerin. With one exception it invariably occurred in the direction of dysgonic to eugonic, or, as the author calls it, S to R. It is well known that in certain types of tuberculosis, such as lupus, variant strains may arise, some of which retain their characteristics in culture. It is also clear that variations may occur primarily in the laboratory. So far, however, no strain has yet been found to change in type from typical human to typical bovine or vice versa. Dr. Frimodt-Möller's monograph contains observations of much interest, which are presented in a clear and easily assimilable form. The initial historical introduction will be of special value to those who have been unable to follow the often complex results described by previous workers.

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[2] *Lancet,* 1939, 1, 1088.
[3] *Arch. Surg.,* Chicago, 1938, 37, 521.
[4] *Science,* 1939, 89, 250.

[1] *Dissociation of Tubercle Bacilli: Investigations on the Mammalian Types (including B.C.G.)* By J. Frimodt-Möller. Copenhagen: Arnold Busck; London: H. K. Lewis. (10s.)

MEDICAL RESEARCH IN CANADA

The National Research Council of Canada has now issued its twenty-first annual report, a copy of which will be available in the Reference Library, Canada House, Trafalgar Square, London, S.W.1. Special mention is made of the formation of the Associate Committee on Medical Research under the chairmanship of Sir Frederick Banting, co-discoverer of insulin. The method of forming this committee may be considered as typical. Preliminary discussions by representatives of the Canadian Medical Association, the Royal College of Physicians and Surgeons, the Department of Pensions and National Health, and the National Health Research Council resulted in the calling of a conference for the consideration of all matters relating to medical research in Canada. At this conference a composite picture of medical research was obtained when each institution represented at the meeting reported on the scope of the researches on which it was engaged. On the recommendation of the conference the Associate Committee on Medical Research was formed. Since then the correlation of medical research in Canada has been fostered through interchange of visits by research workers and group planning of investigations in many fields. A distinct contribution to the furtherance of organized research in the medical field has thus been made. Similar committees function under the Council in many fields: aeronautics, asbestos, coal classification and analysis, field crop diseases, fire hazard testing, forestry, gas research, laundry research, leather, magnesian products, market poultry, metallic magnesium, parasitology, plant hormones, potato research, radio, radiology, survey research, weeds, and wool. Radium preparations in large numbers are measured and certified in the radium laboratory. Recently a device for rapid testing of radium tubes for leakage was constructed and a method for measuring the radium content of barium-radium bromide preparations was developed.

MALARIA IN MALAYA

The annual report for 1938 of the Malaria Advisory Board, Federated Malay States, records a noteworthy increase in the number of malarial cases admitted to hospital. The total figure, 51,300, compares with 35,500 in 1937 and 27,200 in 1936. These figures are stated to fall far short of the total incidence. Meteorological conditions during the year were unusual, the rainfall having been unduly low. The rise in incidence is, however, chiefly attributed to widespread replanting of rubber. The process involves the formation of large holes from which old trees have been removed and the digging of many other holes, often left open for some months to "weather" the soil, for the reception of planting material from the nurseries. Modern planting practice also requires terracing or the construction of silt pits on hilly land for the purpose of minimizing soil erosion. Collections of water and newly opened seepages thus formed provide many additional breeding places for anophelines, and, unless every precaution is taken, intensive breeding is likely to result. Although it has been found that anti-larval measures concentrated within a half-mile radius of habitations usually give reasonable protection, the investigations of Dr. W. E. Holmes, health officer, Kuala Lumpur, showed that *A. maculatus* could be taken at distances up to two miles from a replanted area, where breeding was intense. The mortality for hospital cases of malaria shows a satisfactory decrease, the percentage having fallen from 2.2 to 1.8. Diminished virulence of the parasites and/or increasing immunity of the population are suggested as possible contributory factors. To test the therapeutic value of prontosil in malaria twenty-seven subtertian and thirty-seven benign tertian cases were treated with this drug. The dosage was 1.5 grammes twice daily for seven days. It was found to be less efficient, both in antipyretic action and in its effect on the parasites, than quinine, while it cost more than three times as much. *P. falciparum* proved to be more susceptible to prontosil than *P. vivax.* With regard to the anti-larval oils experiments were carried out to test the effect of the addition of pyrethrum to the oiling mixtures. With the more active oils the only result was that the larvae died more quickly. The number that died was not increased. But with an oil of high boiling range it was found that the addition of pyrethrum increased not only the larval death rate but also the power to penetrate the tracheae of the larvae.

We announce with much regret the death of Dr. J. D. Comrie, physician to the Edinburgh Royal Infirmary, chairman of the Scottish Committee of the British Medical Association, and for many years a member of the Central Council and of the Journal Committee. Dr. Comrie was also chairman of the Central Medical War Committee for Scotland.

Professor J. H. Burn, M.D., has been nominated by the King on the advice of the Privy Council to be a member of the General Medical Council for five years in succession to Sir George Newman.

WAR WOUNDS AND AIR RAID CASUALTIES

The following article is a supplement to the series of lectures on war wounds and air raid casualties printed in these columns*

CHEMICAL WARFARE AND THE DOCTOR—I

BY

E. M. COWELL, C.B.E., D.S.O., T.D., F.R.C.S.,
A.D.M.S. 44th (H.C.) Division, T.A.

From the earliest times in the history of the world certain sociological, physical, and biological factors have governed the problem of the growth of population. Disease, as seen in individual cases, in epidemics, or in pandemics sweeping Europe in the Middle Ages, has from time to time decimated the population. War, with its horrors and vast numbers of men killed by disease and wounds, may be included in this list, together with famine, pestilence, floods, and earthquakes.

The present war, however, will be different and probably more horrible. While in former days war was an affair where men fought men, and women and children suffered accidentally or indirectly, to-day the idea is accepted by some Governments that it is justifiable for one nation to attempt to impose its will on another by striking a sudden swift crushing blow on vital vulnerable points in the country of its enemies. That is to say, civil centres are to be attacked in addition to, or apart from, definite targets of naval or military importance. For this reason many conferences have been held under the auspices of the International Red Cross of Geneva since the year 1920. The problem of protecting the civil population has now been accepted by every Government in Europe, including that of Great Britain, whose A.R.P. organization is so well known to all.

The subject of the medical aspects of chemical warfare is of grave practical importance to all medical men. It is not enough to be told how to treat the results of exposure to certain gases. As in typhoid, for instance, a study of the aetiology, pathology, and clinical picture is essential. In the present paper a list of substances most likely to be met with in chemical warfare is given, together with an account of their physical and chemical properties and a description of their physiological action. Their pathological effects will be discussed in the next paper.

History of Chemical Warfare

A full account of the history of chemical warfare may be found in a book published in 1935 by two French naval surgeons, Héderer and Istin. "Gas" is one of the most ancient devices used in fighting. Details are described by Thucydides of the method employed in the Peloponnesian War in the fifth century B.C. After months of siege, faggots impregnated with pitch and sulphur were set on fire outside the city walls. The wind drove on the cloud and rendered one point of the defence untenable. However, a thunderstorm broke, the rain extinguished the fire, and the first gas attack on record was unsuccessful. In the same campaign an efficient "flame projector" was designed and used. In 1726 Fleming described in his book *The Perfect German Soldier* several new poisons to be incorporated in grenades.

Chemical warfare fell into disuse for the next hundred years, and the British Government refused to sanction the use of toxic shells and grenades in the Crimea. In spite of the agreement of The Hague, 1899, chemical warfare was reintroduced in the Great War and enormously developed. Although occasional use of toxic shells by the Germans was reported from October, 1914, onwards, it was not until April 22, 1915, that chemical warfare was indulged in on a large scale. The Germans launched clouds of chlorine on a six-kilometre front in a surprise attack, causing 15,000 casualties, 5,000 of them fatal. In addition large numbers of prisoners and quantities of war material were lost to the enemy. The success of this attack depended on the element of surprise. No means were at hand to protect the troops. Major-General C. H. Foulkes, the officer in charge of the Special Brigade in France in the great war, writing in his book *Gas* in 1936, states that many warnings were received of this gas attack. These were not appreciated, however, until 1932. After the April, 1915, attack the matter was at once taken up by our Army Medical Service.

The first mask was immediately devised at the Royal Army Medical College, Millbank. This consisted of a pad of wool impregnated with sodium hyposulphite and tied over the mouth and nose by a length of veiling material. Large numbers of women workers were collected, and in three days the troops at the front were provided with 100,000 masks. In September of the same year chlorine was used by our troops at the beginning of the Battle of Loos. The attack was not very successful, and I remember seeing our own men admitted to a casualty clearing station later in the day with pink eyes and green buttons. Intensive work was carried out in the perfection of the anti-gas respirator, until finally an article was produced which was proof against all gases except carbon monoxide, and which permitted free action in fighting. In 1917 the Germans first used "mustard gas"—another surprise.

It is interesting to note that with the provision of respirators, introduction of gas discipline, and dissemination of a knowledge of chemical warfare, the casualties progressively diminished although the number of our troops in the field was enormously increased.

Agents used in Chemical Warfare

The most useful and generally accepted classification of war "gases" is the physiological one, determined by the action of these chemical substances in various parts of the body. The main groups are, in the order of their toxicity: (I) lacrimators (tear gas); (II) sternutators (nose irritants); (III) vesicants (blistering); (IV) lung irritants; (V) paralysants; (VI) gases met with accidentally, as carbon monoxide.

The following list is compiled from Vedder (1925, U.S.A.), with up-to-date additions.

I. *Lacrimators.*—Acrolein; benzyl bromide; bromacetone; bromobenzyl cyanide (B.B.C.); chloro-acetophenone (C.A.P.); dibrom-methyl-ethyl-ketone; ethyliodoacetate (K.S.K.); methyl-chlorsulphonate; monobrom-methyl-ethyl-ketone; xylylene bromide.

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* Received for publication on August 4.

II. *Sternutators.*—Diphenylchlorarsine (D.A.)—Clark I; diphenylcyanarsine (D.C.)—Clark II; diphenylarsine-chlorarsine (D.M.)—Adamsite (or chloro-dihydro-phenarsazine); ethyl-dichlorarsine; *N*-ethyl-carbazol.

III. *Vesicants.* — Lewisite — chlorovinyl-dichlorarsine; mustard — dichlordiethyl sulphide (thiodiglycol chloride).

IV. *Lung Irritants.*—Chlorine; chloromethyl-chloroformate (palite); chloropicrine; cyanogen bromide; dichlormethyl ether; phenyl-carbylamine chloride; phosgene; stannic chloride; trichloromethyl-chloroformate (diphosgene or superpalite).

V. *Paralysants.* — Hydrocyanic acid; sulphuretted hydrogen.

VI. Gases met with accidentally—see Group III below.

In the *Medical Manual of Chemical Warfare* (H.M. Stationery Office, 1939) the following classification is suggested, with a view to combining both tactical object and physiological effect.

Group I.—Lethal: (*a*) vesicants; (*b*) lung irritants; (*c*) paralysants.

Group II.—Harassing: (*a*) lacrimators; (*b*) sensory irritants.

Group III.—Accidental (gases not used as weapons, as carbon monoxide).

The physical and chemical properties of the chemical agents most likely to be met with are briefly described below. The volatility of these substances is important. Gases may be persistent or non-persistent (P. or N.P.).

Lacrimators

Bromobenzyl cyanide (B.B.C.) (discovered in 1881), as commercially prepared, is a heavy, oily, dark brown liquid, very persistent, so that contaminated earth causes lacrimation after thirty days' exposure. B.B.C. corrodes metals except lead; it is expensive, and not likely to be used.

Chloro-acetophenone (C.A.P.) (1887) consists of white crystals melting at about 60° C. and with a high boiling-point and a low vapour pressure. It is very slightly soluble in water, but soluble in ether, alcohol, or benzene, and a hot aqueous solution of sodium carbonate. It smells of cheap scented soap. It is cheap, and easy to manufacture and store in shells or bombs, so that it is the substance most likely to be met with. It is non-persistent. It may irritate and redden the skin.

Ethyl-iodoacetate (K.S.K.) is a dark brown liquid, invisible in the gaseous state. It is persistent, and has a pear-drop smell.

Sternutators (All Non-persistent)

These substances form the "irritant smokes" and contain arsenic.

Diphenylchlorarsine (D.A.) (Clark I) (1878) is a thick semi-solid compound, slightly soluble in water but soluble in chloropicrin and phosgene. As a vapour it is a strong irritant, and when diluted is aromatic.

Diphenylarsine-chlorarsine (Adamsite) (1918) is similar, but is not soluble in phosgene. It tarnishes metals (D.A. does not), is easier to manufacture, and the toxic effects last longer.

These arsenic compounds are employed as mists or clouds. Both Groups I and II are easy to detect.

Vesicants

Lewisite (chlorovinyl-dichlorarsine), first made in America in 1918 and not hitherto used in warfare, is a heavy oily liquid darkening on standing. It is easier to detect than mustard, which in low concentrations may produce its effects before its presence is realized. The slight odour of lewisite resembles geraniums. It is soluble in oils, benzene, and the ordinary organic solvents. It is insoluble in water, but hydrolyses rapidly. This action is increased by heat and alkalis. The blistering concentration is given as 0.334 mg. per litre, which theoretically makes it an effective war gas. However, as it is so rapidly destroyed by water or aqueous vapour, and has not yet been put to a practical test, it is unlikely to be used in war. Lewisite is persistent, but less so than mustard.

Mustard (dichlordiethyl sulphide) was first used by the Germans in 1917, and manufacture of this substance by us was not completed until almost the end of the war. As in the case of chlorine, our Intelligence Service secured early information, the full meaning of which was, however, only understood at a later date. Mustard is a heavy oily liquid, in the pure state colourless and almost odourless. In quantities as produced commercially it is dark in colour and smells of mustard or garlic. It is highly persistent, and stable at ordinary temperatures. Heat causes decomposition into HCl and highly toxic lacrimators. Contact with water causes slow hydrolysis, which is hastened by heat. The resulting products are harmless—dilute HCl and thiodiglycol. Since its specific gravity is 1280 at 15° C., it readily sinks when added to water. Weathering will thus ultimately destroy mustard. Hypochlorites react violently with mustard, producing a non-toxic sulphoxide. This explains the use of "bleach" calcium hypochlorite.

Mustard is soluble in water to less than 1 per cent., but is freely soluble in the hydrocarbon oils, such as paraffin or petrol, and substances such as animal fats, ether, benzene, alcohol, acetone, carbon disulphide, etc. It is also readily dissolved in rubber, and permeates clothing, leather, wood, bricks, etc., like ink on blotting-paper. This property of penetration into most materials other than metals and substances with a glazed surface renders its destruction especially difficult. Mustard has a low vapour pressure, which explains why it vaporizes so slowly and is so persistent, and also the varying effects according to the temperature and humidity of the atmosphere.

This is the gas most to be expected in war. Of 36,965 gas casualties in the American Army, 27,711 were due to mustard (Vedder), and of the 160,970 gas casualties admitted to the casualty clearing stations of the B.E.F. 77.7 per cent. were due to the same cause. Exposure to a concentration of 1 in 1,000,000 is effective.

Lung Irritants

Chlorine is a greenish gas, 2.5 times as heavy as air; it therefore clings to the ground and fills hollows. It is easily liquefied; one litre of liquid chlorine at 25° C. will produce 434 litres of gas. Its pungent smell is well known. It is non-persistent. Pure dry chlorine will not corrode steel.

Phosgene ($COCl_2$; C.G.; carbonyl chloride or carbon oxychloride) is the most effective and lethal of the pulmonary irritants, but fortunately is completely resisted by the respirator. It is a liquid, boiling at 8.2° C. (46.8° F.). It is colourless, smells of "musty hay," and is 3.5 times as dense as air. It is non-persistent, and is easily moved on by the wind. Phosgene is readily hydrolysed, so that it cannot be employed in damp or rainy weather. The hydrochloric acid liberated in the presence of moisture corrodes steel, damages clothing, and destroys the tissues of the lungs. Soda-lime is used in the canister of the respirator to absorb phosgene. Phosgene will dissolve several of the toxic gases, and mixtures of mustard, chloropicrin, and the arsenic smokes may be expected. This gas is liquefied easily, as in the case of chlorine. *Diphosgene* (perstoff, superpalite, or trichloromethylchloroformate) is an oily liquid boiling at 128° C. It is heavier than phosgene, has the same toxicity, and is an intense lacrimator.

Chloropicrin (P.S.)—nitrochloroform—is a colourless volatile liquid, not hydrolysed by water, and semi-persistent. It also is a lacrimator. It is heavier than water, boils at 112° C., and is approximately 5.5 times heavier than air. It is killed by a solution of sodium sulphite in 50 per cent. alcohol. It has a penetrating odour and is strongly irritant. Exposure to frequent low concentrations may induce attacks of asthma.

Paralysants—These substances are not of much practical use in warfare.

Carbon Monoxide.—The management of carbon monoxide poisoning will not be dealt with in this paper.

Gas-detection Table

The following simple hints have been already published (*Pocket Book of First Aid in Accidents and Air Raids*, second edition, 1939, G. Gill and Son).

Part of Body Affected	Appearance	Smell	Chief Action	Gas
Eyes and nose	Vapour	Pungent	Tears	Lacrimator
Nose and throat	Mist	Faintly fruity	Sneezing	Sternutator
Lungs	Colourless	Musty hay	Cough	Phosgene
„	Green cloud	Pungent	Delayed collapse	Chlorine
Skin	Oily liquid	Garlic	Blisters	Mustard
„	Vapour nil	Geraniums	Redness and blisters	Lewisite

Chemical Analysis

In the issue No. 10 of volume 56 of *Chemistry and Industry*, published in 1937, appears a very important seven-page paper on analysis for the detection of poison gases by Studinger and Müller, translated by Mr. F. G. Crosse, F.I.C., from an article in "Mitteilungen aus dem Gebiete der Lebensmitteluntersuchung und Hygiene," 1936. Some of the items of chief interest are described in the following paragraphs.

PREPARATION OF THE SAMPLE

Visible drops are soaked up in filter papers held in forceps or ether extracts are made from contaminated soil. All operations are carried out in a fume cupboard, the operator wearing a respirator if necessary. Phosgene is detected by the reagent mentioned in C.I. below.

PRELIMINARY TESTS

(1) Using small test-tubes, the boiling-point is detected. (2) Decomposibility in water: a capillary loop of the extract is heated with about 0.5 c.cm. of water and tested with a 5 per cent. solution of $AgNO_3$. Mustard decomposes slowly; chloropicrin and the arsines do not decompose. (3) Tests for halogens in aliphatic compounds or in the side chain of the aromatic poison gases. (4) Pringsheim's test: a mercuric chloride test paper is coloured yellow by AsH_3. (5) Testing for nitrogen and sulphur: (*a*) the Prussian-blue test; (*b*) sodium nitroprusside—2 drops of 10 per cent. solution are added to the substance under test after being heated with sodium, a violet coloration indicating sulphide (mustard).

From Tests 4 and 5 poison gases can be classified:

C.I.—Gases resembling chlorine only: xylylene bromide, chloro-acetophenone, palite (chlorine-phosgene).

C.II.—Gases containing chlorine and sulphur. Mustard.

C.III.—Gases containing chlorine and nitrogen. Chloropicrin (HCN).

C.IV.—Gases containing chlorine and arsenic. The arsines and lewisite.

C.V.—Gases containing metal. Iron, carbonyl, lead, tetra-alkyls.

SPECIAL REACTIONS

Halogen Test.—Xylylene bromide boiled with alkaline potassium permanganate solution forms phthalic acid. This is isolated by extraction with sulphuric ether. The residue is heated to 250° C. with concentrated H_2SO_4 and a little resorcinol. Excess of soda lye gives a green fluorescence.

Chloro-acetophenone (C.A.P.).—A long test, where the substance is oxidized to benzoic acid with chromic acid, then nitrated and treated with ammonia and hydroxylamine HCl solution. The presence of ammonium diamino-benzoate is shown by a red-brown coloration on immersing the tube in hot water.

Phosgene is detected as diphenylurea or by a colour test paper. Air is passed over the sample into an absorption flask containing anil-water; an immediate white turbidity is produced. This is filtered off, dried at 70° C., and its melting-point determined (235° C.). Two tests are given with prepared test papers. In the second test a green coloration indicates phosgene. The reagents required are: (1) 0.05 to 1 gramme 6-nitroso-dimethylaminophenol dissolved in 50 c.cm. of hot xylene; (2) 0.25 gramme *m*-diethylaminophenol dissolved in 50 c.cm. of hot xylene. 5 c.cm. of solution No. 1 are mixed with 1 to 2 c.cm. of solution No. 2 and put on to filter paper. This paper when held in the air above the sample turns green.

Chlorine.—One gramme of soluble starch is dissolved in 100 c.cm. of water containing 5 grammes cadmium iodide and 5 grammes sodium acetate. A filter paper moistened with this solution goes blue when chlorine is present.

Mustard.—Eleven tests are given, all but one requiring the presence of liquid mustard. Of these the simplest is the sodium iodoplatinate test paper, 2 per cent. solution. This paper in the presence of mustard or an aqueous mixture of it becomes purple-red, then blue. In this country yellow detector disks are provided which become red in the presence of liquid mustard. The chemistry of this test is secret, but it probably depends on selenium.

Grignard's test will detect the vapour of mustard. 20 grammes of sodium iodide are dissolved in a little water and an aqueous solution containing 1.65 grammes of copper sulphate is added. Into this mixture is stirred 2 c.cm. of a solution of 35 grammes of powdered gum arabic in 100 c.cm. of water. The whole is made up to 200 c.cm. and the cuprous iodide filtered off. This clear solution is stored in a brown bottle. When mustard vapour is passed through 3 c.cm. of this reagent a turbidity appears due to the formation of di-iodo-diethyl sulphide.

Chloropicrin.—Four tests are given. Of these the simplest is Labat's. One drop of chloropicrin extract is added to 2 c.cm. of 5 per cent. alcoholic potash lye. When a small crystal of thymol is dropped in a yellow colour appears. Several supplemental tests are given, which need not be described in this paper.

Summary

A sound knowledge of the chemical poisons which may be used in modern warfare is the preliminary essential to a complete acquaintance with clinical diagnosis, management, and treatment of casualties.

An intimate chemical study of all the "gases" will interest only a few experts, but a working knowledge of their physical and physiological properties should be acquired by all medical men as soon as possible.

(*The second part of this article will be published next week.*)

RED CROSS AND ORDER OF ST. JOHN

JOINT WAR-TIME ORGANIZATION

The British Red Cross Society and the Order of St. John of Jerusalem have amalgamated for the duration of the war, as they did during the war of 1914–18. A Joint Emergency Committee has been formed, and work is actively proceeding in many departments. The department of medical personnel is presided over by Lord Horder; that of nursing by Lady Ampthill and Dame Joanna Cruickshank, late matron-in-chief of Princess Mary's R.A.F. Nursing Service. The transport of wounded is under Sir Alexander Roger, director of the motor ambulance department of the Red Cross; Viscount Falmouth supervises the central hospital supply services; the Earl of Clarendon the work for prisoners of war and for wounded and missing; Lord Stanmore the auxiliary hospitals and convalescent homes; and Sir Charles Howell Thomas the very important matter of stores. The International Red Cross of Geneva has appointed a liaison officer—a Swiss gentleman, who is now in London.

Nursing Services

Neither of the two organizations which have now amalgamated has any recognized trained nurses' department in peace time; such a department functions only in war, and it has now been organized. Its task is mainly to deal with the nursing services of auxiliary hospitals and convalescent homes, and its first obligation is to the military authorities, but this time its activities are being extended to cover certain civil requirements, including those of maternity institutions. The nursing activities of the Red Cross are at present, as Dame Joanna Cruickshank explained to our representative, still in the preparatory stages, and their expansion will necessarily depend on the development of hostilities on the Continent. Meanwhile, a new uniform has been provided for the Red Cross nurse. It is designed with a view to comfort and ease in moving about and includes a low soft collar and soft cuffs. The V.A.D.s are again prominent, and there are many hundreds of V.A.D. depots in the country. This department is under the direction of Dame Beryl Oliver.

Gifts to the Red Cross

Meanwhile, in spite of the impoverishment caused among large sections of the community owing to the war, the Mansion House Fund continues to attract public support. Some of the gifts received have caused a certain embarrassment. The other day an anonymous donor contributed an eighteenth-century diamond necklace of unusual size and brilliance which has been valued by experts at £30,000. The problem is how to realize such a gift. At a sale by auction it would probably fetch nothing like its real value. The suggestion of a lottery has been made, but that method at present is illegal. Possibly the Chancellor of the Exchequer may be asked to pass a short Bill through Parliament legalizing such a method strictly for Red Cross purposes during war.

Aerial Ambulances

An event which has caused concern in Red Cross circles is the shooting down of a Red Cross aeroplane over Germany and the killing of an American woman doctor whom it carried. Article 18 of the Geneva Convention lays it down that an aeroplane is just as lawful a means of carrying wounded as an ambulance train, but that it must have the Red Cross properly painted on its wings, must not carry any national emblems (such as the swastika or tricolor), and must come down on demand. It is possible that the aeroplane in which this woman doctor was travelling failed to come down on demand. Aeroplanes are unlikely to be used to any great extent for the transport of wounded. The International Red Cross Conference which met in London last year asked the national societies to organize courses of training in aerial transport; but the carrying capacity of aeroplanes is very limited, and, moreover, while ambulance road vehicles can be readily replaced, it is not so easy to replace the ambulance aeroplane.

If any doctors wish to write to the Red Cross offering their services or making inquiries it will save time if their letters are addressed in the first instance to 2, Chesham Place, S.W.1. Doctors' wives and others who may like to make gifts or undertake work for Red Cross purposes may be interested to know that the urgent need of the moment is for wool in any shape or form, and any gifts of the kind will be greatly appreciated by the department which deals with the central hospitals supply services at the Victoria Club for Ladies, 9, Halkyn Street, S.W.1.

LONDON MILK SUPPLY

The London County Council reports an investigation, conducted some time before the outbreak of war, to discover the amount of liquid milk consumed daily in London and the treatment (if any) to which it is subjected. The daily consumption of milk in the county of London is 460,000 gallons. Information as to the treatment of 437,231 gallons is available, and shows that of this amount 405,162 gallons, or 92.7 per cent., is pasteurized, 10,191 gallons sterilized, 15,691 gallons processed, 1,696 gallons tuberculin-tested, and the remainder, 4,491 gallons, is ordinary raw or other untreated, including accredited, milk. Licences for the pasteurization of milk are held in London by twenty-eight dairymen, the depots being situated in fourteen boroughs. It is a matter for regret, says the Council, that as a minimum the proposals concerning pasteurization made in the Milk Industry Bill, 1938, have not been incorporated in the Milk Industry Bill recently introduced into the House of Commons. It is also regretted that if the term "accredited milk" is retained, no provision is made to ensure that such milk shall be of at least a better standard as regards the presence of tubercle bacilli than ungraded milk. Milk to be sold under the designation "accredited" must not at any stage be treated by heat. The use of the designation conveys the natural impression that such milk is of particularly high quality, and certainly higher than ungraded milk. A random analysis of samples of milk arriving in London in churns points to the conclusion that such a natural impression is unfounded, as the percentage discovered to be tuberculous was persistently higher in the accredited than in the ungraded milk. Since the beginning of 1938 the sampling has resulted as follows:

Year	Quarter	Ungraded			Accredited		
		No. of samples	Number tuberculous	%	No. of samples	Number tuberculous	%
1938	First ..	371	22	5.9	130	13	10.0
	Second	435	32	7.4	75	9	12.0
	Third ..	379	27	7.1	98	10	10.2
	Fourth..	434	32	7.4	83	13	15.7
1939	First ..	461	32	7.0	123	9	7.3

The results of this analysis of milk samples have been communicated regularly to the Ministers of Health and of Agriculture and Fisheries with a view to action being taken to remedy the unsatisfactory position.

Prostitutes.—The psychiatric examination of fifty-four prostitutes showed that one-fifth were to some degree mentally defective, a majority were constitutional psychopaths, and less than a fifth were comparatively normal. Nine-tenths had had venereal disease, usually both gonorrhoea and syphilis. Over half had severe physical handicaps. Almost all were addicted to alcohol, and some took other drugs. Forty-seven of the fifty-four had never engaged in any other occupation.—Psychiatric Examination of Female Prostitutes in Sweden. G. Jonsson.—*Acta psychiat.* 1938, **13**, Fasc. 4, 463.

HOSPITAL BEDS FOR CIVILIAN SICK

According to a statement issued from the Ministry of Health, the hospitals are acting upon the Minister's instructions that the arrangements for treatment of casualties must not be allowed to deprive the civilian sick of in-patient treatment for ordinary illnesses, if their condition requires such treatment. It is the Minister's intention that all the available accommodation in general and special hospitals should be pooled and used to the best advantage to meet the individual needs of each area, whatever they may happen to be. Great importance is attached to the maintenance of residential accommodation under the tuberculosis schemes of local authorities. Sanatoria and hospitals for tuberculosis should continue to function and to receive patients, especially those in the infective stages. Again, patients suffering from cancer, particularly those in the early stages of the disease, should be admitted to hospital for treatment. The Minister will issue a circular to local authorities giving guidance in these matters in greater detail. Meanwhile every possible assistance in planning hospital accommodation for the ordinary needs of the civil population will be given to medical officers of health by the Ministry's principal regional medical officers and hospital officers. The hospital officers are ready to advise on the number of hospital beds that can be allotted in an area for sick persons, while maintaining the necessary quota of beds for possible civilian and Service casualties.

Local News

ENGLAND AND WALES

Merger of Newcastle Hospitals

At a special court of the Royal Victoria Infirmary, Newcastle-upon-Tyne, held on September 30, the governors approved in principle the scheme for merging Newcastle hospitals, and the house committee of the Infirmary was empowered to effect mergers with the other institutions—namely, the Newcastle-upon-Tyne Eye Hospital, the Throat, Nose, and Ear Hospital, the Babies Hospital and Mothercraft Centre, and the Hospital for Sick Children. The purpose of the merger is to bring about economies in the working of the different hospitals, and by bringing the various institutions into closer co-operation to make them more advantageous to each other. Under the scheme, which will probably become operative at the end of the war, each institution will preserve its identity, and each will be separately governed and separately financed. It should provide for increased collective activity and concentration of opportunities for service and training.

London Midwifery Service

The London County Council has arranged to continue the domiciliary midwifery service and the maternity units in hospitals. Thirty temporary midwives have been appointed to supplement the permanent staff of seventy midwives. In view of the possible unreliability of postal and telephone services in war time, which might interfere with close relations between the head office, voluntary organizations, and domiciliary midwives, the midwives have been formed into self-supporting groups with leaders and deputy leaders. The leader's responsibility is to allocate bookings, distribute emergency calls, requisition drugs and supplies, and collect necessary records. Facilities are available for dealing with obstetrical emergencies. The effect of the evacuation of expectant mothers cannot yet be determined. It has to be borne in mind that the maternity beds in the London hospitals have been reduced in number by two-thirds, and that some of the evacuees are returning to London. It can be definitely stated that the work of the domiciliary midwives has increased owing to the additional ante-natal work to be undertaken as a result of the closing of borough clinics, the extra time taken to visit patients at night due to reduced street lighting, and the extra work thrown on leaders of the groups through decentralization of administration. The period of nursing has been reduced from fourteen to ten days, and twice-daily visits have been limited to three days instead of four from date of confinement. The rules in regard to refresher courses have been waived by the Central Midwives Board and courses arranged have been cancelled. All forms have been revised so as to supply only essential records and to reduce clerical work to the minimum. Arrangements have been made for certain hospitals, both council and voluntary, to continue to maintain a maternity unit, and the number of beds will be increased or reduced according to circumstances.

L.C.C. Reports

The annual reports of the London County Council extend to eleven separate volumes or parts and have been criticized on the grounds of being bulky and unbalanced. It has been decided that the only volumes to be issued annually shall be the report of the county medical officer of health, the report of the school medical officer, and the medical supplement, containing a series of papers and reports on purely medical subjects selected from contributions by members of the hospital and central medical staff, and the continuance of this last-named volume is also to be reviewed next year. The present annual report of the mental health services is not to be continued in a printed form. In most of the other departments of the Council's work it is not considered that an annual report is necessary, and instead of this a triennial general report will be issued. The reasons for the medical reports continuing to be issued annually are that the report of the county medical officer of health is the only report which comments on the vital statistics of the county, that it includes a comprehensive review of such subjects as housing, milk supplies, venereal diseases, tuberculosis, and the midwifery service, and that the issue of such a report is a statutory obligation on every other medical officer of health in the country; while the report of the school medical officer also is a requirement of the Board of Education.

First Red Cross Flag Day of the War

By means of flag days organized in the streets by individual hospitals citizens of London have in the past been in the habit of contributing large sums, chiefly in pennies, for the upkeep of their hospitals. Two years ago these flag days were combined, and instead of seventy-seven flag days held in London the hospitals organized two only, one in May and the other in October. Preparations were already made for a flag day on October 10, when it was announced that the Central Committee of the London Hospitals Street Collections, through its chairman, Lord Luke, had offered this flag day to be organized on behalf of the Lord Mayor's appeal for the joint organization of the British Red Cross and the Order of St. John. In accepting this offer the Lord Mayor stated that he was inviting others to co-operate throughout the country with the object of extending this London flag day into the first national Red Cross Flag Day of the war. In the short period of time at disposal a great burden of work will be thrown upon the workers giving assistance. Additional voluntary workers who are urgently required should offer themselves as soon as possible either to the mayor in their borough, or to Lord Luke, Chairman, Hospitals Day, 36, Kingsway, W.C.2.

Work at Papworth

The report for 1938 of the Papworth Village Settlement records generous gifts from Sir Edward Meyerstein and an anonymous donor towards the equipment of a large workshop, which is to be named after Mr. Chamberlain. The director, Sir Pendrill Varrier-Jones, reviews the difficulties encountered in the development of Papworth as an industrial enterprise, happily solved through the sympathetic collaboration of the Ministry of Health, the Friendly Societies, and the Trades Unions. Reviewing the future from the national point of view, Sir Pendrill claims that the way is now clear for the division of industry into two grades, the first profit-making, the second non-profit-making. In the former category only fit men can be employed; Papworth belongs to the latter category. Sir Pendrill further points out that if second-grade industry had the benefit of the saving it effects it would be almost, if not quite, self-supporting. For example, men, women, and families now settled at Papworth would be drawing £17,500 a year in unemployment benefit if they were not at the settlement. Instead they paid, during 1938, £1,090 into Government insurance funds, while Papworth industries, their employers, contributed a further £1,131. Given this annual total of nearly £20,000, Papworth could provide the service of a sixty-year 3½ per cent. loan, more than large enough to build the entire settlement. The wide application of the Papworth experiment to the vast problem of disablement would not only be a financial benefit to the country, but would also remove from the disabled a legitimate source of grievance. "And let it not be forgotten that the most dangerous agitators, the most successful revolutionaries, have been the men rendered bitter by privation and disease."

At the annual meeting in London the president, H.R.H. the Duke of Kent, alluded to the work of Dr. Brown Cruickshank, carried out in the Papworth research department. Lord Willingdon, the chairman, said that wages to a breadwinner were often almost as vital to health as medical treatment, and that Papworth had associated the two in a big centre of social medicine. Sir Pendrill Varrier-Jones stated that the personal interest of the Royal Family had contributed largely to the development of Papworth. All the royal luggage for the Canadian and American tour was made at the settlement.

SOUTH AFRICA

The Capetown Health Report

Vital statistics recorded in the annual report for the year June 30, 1938, of the medical officer of health, city of Capetown, compare unfavourably with the figures for the preceding five years. The death rate showed an increase of 2.4 per cent. in Europeans and 4 per cent. in non-Europeans. On the other hand there was a decline in infant mortality of 9.4 per cent. in Europeans and 4.9 per cent. in non-Europeans. The depressed social and economic conditions of the non-Europeans, operating through under-nourishment, bad housing, overcrowding, and low cultural standards are reflected in classified mortality rates. For example, deaths under 25 years of age were 17 per cent. of the total in Europeans, 58 per cent. in non-Europeans. From tuberculosis the death rate in non-Europeans was 5.8 times as great as in Europeans. In infants under 1 year of age the death rates from measles, respiratory diseases, and diarrhoeal diseases were respectively 2.3, 4.8, and 6.2 times as great in the one race as in the other, and in infants between 1 and 2 years of age the corresponding rates were 5.9, 6, and 23.6. The report states that no new houses were built by the city council during the year under review, and that overcrowded and insanitary conditions are still all too frequent, not only among the coloured population but also among certain of the poorest of the Europeans. Houses affording reasonable accommodation for one family are often sublet to several, and in many cases whole families live in single rooms. In a recent survey of an area in Central Capetown, with a population exceeding 45,000, of whom 91 per cent. were non-Europeans, more than half were found to be living in single-room lettings; in another area one-third of the population were in a similar predicament. Despite extension of sewerage schemes many areas in the suburbs are still without proper drainage, and in June, 1938, faeces were being removed by men and wagons from nearly 6,000 premises dependent on pail closets. Among efforts to ameliorate the condition of the poorer sections of the community is a State-aided milk and butter scheme. The butter is sold at 6d., 5d., and 4d. a lb. for the first, second, and third grades respectively. Unfortunately the privilege of purchase is restricted to Europeans and Cape coloured; natives and Indians, despite the representations of the city council, are excluded. Milk is supplied to school children at a charge of 2s. per quarter, partly or wholly remitted in cases of poverty. During a temporary milk shortage cheese was supplied to coloured schools: 7,376 Europeans and 23,616 coloured children received a half-pint of milk or an ounce of cheese daily.

Correspondence

Radium Precautions

Sir,—In your issue of September 16 (p. 614) you say the Radium Commission would like to hear of any suggestions for resuming radium therapy. I have a simple one to make: pull the radium needles out of the bore holes and use the radium again. In common with many other radiologists, I think that this burying of radium needles is quite unjustifiable. It was done, I know, on the advice of some experts, but I am convinced it is a panic measure, based on a very faulty estimate of the dangers involved.

Think of the sequence of events necessary to cause a serious risk of radium poisoning. A bomb must hit the building, penetrate to the basement (where obviously the radium safe would be), burst wide open a heavy steel safe, and scatter into small fragments a large almost solid mass of a plastic metal, lead. It must then split open a considerable number of tough, malleable platinum containers (each of very small mass) and disperse widely the contained radium salt.

And now please draw up a balance sheet. Place on the credit side the hypothetical prevention of loss of life from this chain of improbable possibilities. On the debit side place the lives lost because radium therapy is withheld, and note the hopeless imbalance. So far the "black-out" accident cases and these cancer patients have been the principal British casualties. I submit that a sense of proportion in those in charge of the nation's radium would have lessened the number of the latter.—I am, etc.,

London, W.1, Sept. 26. S. Cochrane Shanks.

Organization of the Emergency Medical Services

Sir,—I quote from the article by Lieut.-Colonel W. A. Lethem which appears in your issue of September 23 (p. 656): "Probably a very high percentage of all casualties will be classified as orthopaedic, and at first will have to be admitted to any surgical hospital, though in time special types of case will be transferred to the care of surgeons with specialized experience." This is not the best treatment for orthopaedic cases. "In time" is a very elastic phrase. The cases may be a long time before they get to an orthopaedic hospital. Meanwhile in the stress of circumstances and for want of the "surgeons with specialized experience" undue suffering and avoidable crippling may result, and individuals will become an unnecessary financial charge on the country. Therefore, both on humanitarian and on economic grounds, these cases should reach a special orthopaedic hospital at once. I do not think that this is impossible. I wrote a letter which appeared in the *Times* of August 9 last to urge it. I recall the efforts of Sir Robert Jones in the last war which resulted, after some interval, in the establishment of special orthopaedic hospitals. I only wish that he were alive now to exercise his powerful influence in the direction which I advocate.—I am, etc.,

Cardiff, Sept. 27. A. W. Sheen.

Doctor and Patient in War Time

Sir,—The recent correspondence on the subject of war neuroses raises a subject of wide interest—namely, a doctor's influence on and his method of first approach to his patient. It is our ordinary task as doctors to give our patients courage in their illness and confidence in their recovery. Obviously in regard to material things a man cannot give what he has not got. This is equally true of emotional and spiritual things. Some men are fortunate in the firmness of their faith, and in having such a surplus of courage and confidence that their very presence is a help to their patients. For those of us who have not such surplus power as may be called for in the care and treatment of war-shattered patients there are two ways in which we can help ourselves to help them.

First, I believe that what we continually, consciously, and purposely think becomes a habit and affects our attitude of mind. We should therefore take pains to determine that our own thoughts are those of courage, confidence, faith, and hope. We must sedulously refuse every thought of fear, regret, resentment, and the like, because these thoughts arouse emotions that have a weakening effect. In other words, if it is not already our habit, we must set ourselves at once the task of collecting good stuff to give away to our patients. Secondly, let us mark the importance of words, both because of their meaning and because of their associations. Word associations are especially important, because they may become so strong that the original meaning of the word is lost.

With these things in mind, and realizing the effect of a first impression, it is interesting to reflect how often the first words spoken by a doctor to his patient are, "What do you complain of?" The reply may be in terms of a bad pain or other disquietening sensation, and quite often our next remark is, "I am sorry." And so the first word we use to our patient is complaint, a word that suggests something wrong, a word that opens the door to actual fear. The next word is "sorry," a word that suggests self-pity. What worse sensations than fear and self-pity can we offer to those who come to us for help? Surely we should forget the word "complaint," and only when we weakly allow ourselves to indulge a patient may we allow ourselves to pity.

The first question we put to a patient cannot of course be positive and certainly not buoyant. But it can be colourless, or, better, it can contain the idea of acceptance. It may seem difficult to think of opening questions on either of these two lines. With practice there are a number to be found. Needless to say the whole history of symptoms (better called sensations) should be taken on the same positive level of acceptance, or, failing this, on the colourless plane of kindly inquiry.

In making these suggestions it is in my mind that the doctor who is going to look after war-worn persons should first have thought as to his own attitude of mind and his method of approach to his patient. Generally we think of our patients first!—I am, etc.,

St. Albans, September 25. Geoffrey Evans.

Psychological Casualties in War

Sir,—I read with particular interest Dr. Maurice Wright's two articles on psychological emergencies and casualties (*Journal*, September 9, p. 576, and September 16, p. 615) because first as a battalion medical officer during the last war and secondly as a psychotherapist with the Ministry of Pensions in the following years I arrived through experience at certain views.

I have not so far seen anything published which suggests that the Ministry of Health is making any real preparation for psychological casualties. These casualties will be heavy among the civilian population, whose resistance has not been fortified by discipline and esprit de corps. Such casualties have the worst possible effect on morale. The civil population is inured to street accidents and injuries at work, and physical casualties will not differ greatly from these, but they are not used to psychological casualties and will suffer from them. Such cases are positively infectious and must be evacuated and kept away until they are rehabilitated. Moreover, they should not be detained in C.C.S. or other hospitals, but cleared as soon as possible to the appropriate special hospital, where their treatment can be carried out. The shorter the time between injury and the beginning of psychological treatment and the less the interference *en route* the quicker the cure.

I hold no brief for any "rapid" method of treatment, having seen as battalion medical officer many such cases when returned to duty. If they did not relapse they were generally quite useless, as no one felt inclined to trust to them in emergency. All supporters of rapid methods appear to me to be optimists. Sir Arthur Hurst (September 23, p. 663) is no exception. I worked in four different "shell-shock" hospitals, and relapsed Seale Hayne patients were admitted to all of them, and were generally found to have no insight into their condition.

I view with horror Dr. Wright's supposition that psychological hospitals will be large, admitting both sexes and all ages, types, classes, and even races. I feel that no psychological hospital should contain more than sixty or seventy patients with three medical officers and a superintendent. Dr. Wright mentions the urgent need of all neurotics for security, and as they cannot be expected by any means to gain this feeling in a danger area their hospital must be placed in as safe a position as can be found.

As to the shortage of psychotherapists, there must be many, like myself, too near the age limit to volunteer for the R.A.M.C. but who would be glad to resume the most interesting of medical work if they are required—as they will be. If we are considered too out of date as psychotherapists, which remains to be seen, I suggest that our previous experience might commend us as superintendents of psychological hospitals, where we could at least show our ability to understand and appreciate the work of the staff and the meaning of the "psychological approach." This was not always so in my past experience.

I should be glad to hear that the Ministry of Health was taking over country houses or small hotels in Cumberland, Westmorland, West Yorks, Wales, Devon, and Cornwall, and staffing them for this purpose. Such hospitals have the great advantage from the Treasury point of view that they require practically no expensive equipment.—I am, etc.,

Barton-on-Humber, Lincs, September 26. John A. Tippet.

Sir,—As neurologist to the Medical Research and Intelligence of the A.E.F. in France part of my duty in 1917 was to visit frequently the front stations as well as the base hospitals where neurotic casualties were dealt with in order to ascertain the best methods of rehabilitating men thus disabled.

Before the inauguration of successful methods in 1916, thousands of men had been relegated to base hospitals, where they were lost to the Service for months, and many for years, while I was informed that in England the losses were at least 100,000, most of these having been permanently discharged from the Army and their usefulness ended.

At the conclusion of the war the French method had been so perfected that there were left only eighty-seven intractables. Even then these were not discharged, the policy being to return them to civil life only when rehabilitated.

In order to send back the thousands of casualties to the fighting force without the long delay impracticable in warfare it is evident that no elaborate reconstruction of personality is feasible. Methods used must be rapid. It should also be evident, except to those ridden by *a priori* theories, that men who have adapted themselves to civil life and army training, and warfare for months are not chronic misfits in need of complete readjustment. This is also true of the neuroses of civil life, in the treatment of which the coat should be cut to fit the cloth and not tailored to pattern, as theorists would have it.

Hence the disabling symptoms of an evacuated war neurotic were usually removable by rapid re-education, reinforced by the collective mass suggestion of a carefully devised environment in special centres where the exact methods varied with the individuality of the neurologist in charge, although all were based on the same principles. In the front line, however, the rapid restoration to duty of an acute neurosis was often possible to a skilful neurologist alone.

For the prevention of neuroses in the hospitalized the best method of all was that of the British Army Training Camp, to which every sick and wounded man in the later years of the war was sent before being returned to his unit. In these the ingenious yet simple method of restoring moral by collective influence was the idea of an unrevealed genius in the R.A.M.C. These camps followed the French example by keeping the patients in the advanced zone of the Army free from detrimental home influences. But when a whole country becomes liable to devastations by air attack, it may be asked whether this procedure will remain imperative.

These facts (presented in greater detail after the war in *The Military Surgeon*) should be of use in the present situation, perhaps even to the controversialists in these columns.—I am, etc.,

London, S.W.1, Sept. 25. TOM A. WILLIAMS.

SIR,—The article by Dr. Maurice B. Wright in your issue of September 16 (p. 615) is most timely and important and provides food for much thought and action. To a worker in neurological service during and after the last war the scheme appears useful and practicable. The most useful help for psychoneurotics is a person who understands their troubles, who enters their lives, and who by appeal can mobilize the scattered morale. Psychological casualties may be prevented or lessened by good food, adequate rest, sufficient security, and the inculcation of discipline, with the consequent raising of morale. The presence of a good A.R.P. service is an important factor.

At the aid post little treatment will be possible or expedient. The casualties will be retained until the "all clear" and then evacuated to the casualty clearing hospital. Here a physician experienced in such matters should see them, examine them, and sort them out into two groups. First, cases of little severity in people of fairly good morale may be retained for a week and then returned to their homes or to duty. This group will be a small one, but it includes those of excellent morale who have temporarily been put out of action by some sudden shock. About 5 per cent. of cases may be thus discharged. The second group of cases should be sent right away, far from the scenes which upset them, to some base hospital in the country. Here is security, good food, plenty of sleep, and sufficient interests to keep the patients' minds on brighter matters. Psychotherapy most suited to their needs is administered, preferably by a physician with psychotherapeutic experience. His colleagues should include a psychiatrist and a psycho-analyst for special cases. After six to eight weeks cases should be reviewed and regrouped. Patients in the larger group will have recovered to the extent that they may be transferred for further treatment at a convalescent camp or command depot. The smaller group will be transferred to special neurological hospitals.

At the command depot (for soldiers) or convalescent camp the time of the patient is more fully occupied by games, sports, and other exercises. In the case of soldiers training is gradually and sympathetically embodied and increased as groups improve. In six weeks it will be found that five out of six will be able to return to duty. Some do not benefit by this treatment and should be transferred to the special neurological hospitals.

At the special neurological hospitals the more severe cases arrive. These hospitals will be specially staffed. Longer and more individual treatment and longer time are requisite. Psychotherapy by several methods may be used, according to the judgment of the medical officers. It is here that the psycho-analyst school will have a chance to win its spurs. Its efforts will be cordially approved and its results noted with great interest. Physician psychotherapists (that rather old-fashioned group of clinicians to which I belong) will whole-heartedly assist in the great task of mending broken humanity.—I am, etc.,

Aberdeen, Sept. 18. A. W. HENDRY.

SIR,—Sir Arthur Hurst's letter in your issue of September 23 (p. 663) on the treatment of psychological casualties during war is particularly interesting to me.

I would like to point out the importance of making a correct diagnosis between functional and organic disorders. Medical boards have a tremendous responsibility, but how few of those who sit on these boards have any knowledge of electrical tests, or, if they have, employ them as an aid to diagnosis?

During my appointment as medical officer in charge of the department of physical medicine at the Special Surgical Neurological Hospital, Tooting, and afterwards at the Military Orthopaedic Hospital, Ducane Road, I tested many thousands of cases. These tests were an adjuvant to diagnoses already made, and gave an indication of the recovery of nerve injuries. I am sorry to say that in many cases functional was proved to be organic and organic functional. I particularly remember the case of a young soldier who had been shot in the neck, had produced a flail left arm from the shoulder, and had been told by "five medical doctors" (his words) that he would never use it again. He was discharged (*never to return to war and with the addition of a pension*). I italicize these words as I wish to point out the deep psychological effect this must have had on the soldier's mind. Moreover, he had already attuned himself into the future, with its advantages and disadvantages. Then I come along and find nothing abnormal with his electrical reactions, and carefully and tactfully have to get him to believe me instead of "five medical doctors." Luckily he was a keen cornet player, and was soon using his arm and did not have to go to Seale Hayne. No case of paresis, paralysis, etc., should be boarded without an electrical test having been done by an expert.

May I say how heartily I agree with the remarks of Mr. J. S. Kellett Smith (September 23, p. 664)—the effective fervent care of a well-qualified masseuse worketh marvels.—I am, etc.,

JOHN SAINSBURY, M.B., B.Ch.Oxon.

London, W.1, Sept. 27.

Psychological Treatment Centres

SIR,—It seems important at this stage of national stress that psychotherapeutists should put their house in order and pool their spirit for national use during the emergency. What happened in a war twenty years ago with military psychiatric casualties may not be the correct basis for understanding, assessing, or treating civilian neuroses in totalitarian war. Each psychotherapeutist should ere now have settled for his own practical usage basic ideas of psychic aetiology, and spectacular polemics about differential diagnosis or teleological therapy should be put aside for the more urgent need of medical organization to ensure the morale of the civilian population submitted to an unprecedented attack on its "nerves."

How are we as a profession to organize our resources so that we may be ready to meet the new demands upon our national protective functions? How are we to induce the potential psychotic to seek skilled advice or direction while he is still able and willing to do so? How are we to enlist quickly his social residue-values before he is a national debit and a source of psychic infection? Surely this is the problem rather than what "send-fool-further" (S.F.F.) label we shall put on him when he is already on the downhill road.

If sufferers avoid "mental hospitals," "voluntary certification," "psychiatric clinics," till they are beyond prophylactic help of static authorities, surely we need a more dynamic method of getting patients to come early without suggestion of stigma or misunderstanding of motive in our treatment direction.

This urgent demand is a by-product of our strange era and we need a new method of organization to deal with it. *There is at present no national system capable of tackling the problem.* The solution is clear. Establish centres of stability for reintegration of disturbed personality states; establish them to be in time to be working when they will be needed; establish them in a way to gain popular confidence; and, in order that prevention may have precedence of cure, establish them now.

The name "psychological treatment centre" (P.T.C.) is comprehensive enough to cover its primary purpose of being a casualty clearing station for all the multiplicity of minor as distinct from major psychiatric casualties; it is euphemistic enough to assist the doubtful and secretly phobic to come freely to get aid, and it is co-ordinative enough to allow room for all psychotherapeutists who desire to so serve, in part or in whole, for "the duration" and thereafter. If the local M.O.H., as already the rallying-point of local medical practitioners, be requested or empowered to choose or appoint men and women in his district who know local psychology, the establishment of "psychological treatment centres" all over the country could take place quickly and effectively. We have no need to quarrel about methods: only practical application in the present emergency could test the rival claims of various "schools." We need workers in this new sphere. Psychotherapeutists cannot be made in a day, nor can they be produced by a magician's wand in times of peril. They already exist. All they need is to be used, to be organized, and to be got ready for national service. I issue a call to all psychotherapeutists in this country: *Now* is the time to enlist your services for defence of the nation's nerves.—I am, etc.,

A. C. D. TELFER, M.B., B.S.

Walthamstow, September 29.

Organization of Aid Posts

SIR,—May I be allowed to comment on one important aspect of Dr. C. Seeley's interesting article on the organization of the emergency medical services in the *Journal* of September 30 (p. 697)? Concerning first-aid parties he states that "members of the parties must exercise discrimination in the initial disposal of cases, etc.," and I am officially informed that the ambulance men are expected to decide which cases are to go to hospital and which to the first-aid posts. (I did hear, at an official gathering, an even simpler rule—namely, that all ambulance-borne cases were to go to hospitals, all "sitting-up" cases to first-aid posts.) Now where the ambulance men have had some practical experience in air-raid work this method may work fairly well, also in cases where the distance to the casualty receiving hospital is short. But where the casualty receiving hospital is a long way away, and where the ambulance men have not had any practical experience of this type of case—that is, roughly in rural and semi-rural areas—it seems to me unjustifiable to put such a heavy responsibility on the ambulance-trained personnel unless it is quite impossible for them to obtain the opinion of a doctor.

Dr. Seeley states later on that "aid posts have been sited at hospitals . . . or in buildings close to hospitals." In Cheshire, and I believe generally throughout the country, first-aid posts planned at the local cottage hospitals have all been moved away; I think quite rightly. In these circumstances over wide areas ambulances must often pass by or close to an aid post before they can get to the casualty receiving hospital. Where such conditions obtain it would seem much more reasonable for such cases to call at the aid post and be seen by the doctor there, if possible, without being removed from the vehicle, and the doctor then can decide whether the case should go straight to hospital, whether it requires immediate treatment for pain or shock at the first-aid post, or otherwise give directions and remove responsibility from the willing but less well-trained first-aid parties. Colonel E. M. Cowell (April 29, p. 883) has stressed the importance of the immediate and preventive treatment of shock, and the excellent instructions for first-aid posts (E.M.S./Gen/245) issued on the outbreak of war gives as the second of the functions of such posts "to arrest haemorrhage, relieve pain, and so prepare those casualties who may be found to require institutional treatment that they can be transferred to the casualty (receiving) hospital with the least possible harm—that is, by having taken steps to prevent any immediate deterioration."

Whether such steps should be taken immediately or whether they can be safely left till the case can reach hospital is often a matter requiring much judgment, and certainly a skill beyond that of the usual ambulance trainee. Many doctors in charge of first-aid posts have had war training which should fit them admirably to discharge this onerous duty. It seems a pity to prevent the civilians who may be injured obtaining all the help they can from the doctors on the spot by giving positive directions to the ambulance men to do something for which most of them are quite unfitted. It would seem much wiser to give a general direction that ambulance men may be allowed to discharge this function, and leave to those responsible in each locality the duty of making the most satisfactory arrangements they can in their particular circumstances.—I am, etc.,

Winsford, Cheshire, Oct. 2. W. N. LEAK.

Anaesthesia in War Time

SIR,—Concerned as this subject is almost entirely with the surgery of wounds, it cannot be divorced from surrounding conditions in which operations have to be done one after the other in quick succession and without the deliberate preparation and attention to perfected details that pertain in peace-time surgery. In the field there will be three chief categories of treatment:

1. The urgent abdominal and cranial surgery done by special surgical teams at the front.
2. The less urgent cases dealt with in casualty clearing stations.
3. The cases done in the general and stationary hospitals at the base which cannot wait over the time of transport to England.

In No. 1 the anaesthesia is in the hands of a special member of the team who will as a rule be selected from anaesthetic specialists. In cases of torn intestines or spleen, with abdominal haemorrhage, or in cases of head wounds the patients are often *in extremis* and the surgeons require as skilled anaesthesia as they can get. But in all the many casualty, stationary, and general hospitals there will be more anaesthetists required than there are specialists available. After a big action ambulance trains arrive with several hundred cases that require major operation.

By the refinements of modern anaesthetic practice, complex machinery has been introduced whereby ethylene, cyclopropane, and carbon dioxide as well as nitrous oxide and oxygen, and ether if required, can be administered. But these complicated contrivances are very far from being fool-proof—that is, beyond the management of those who are without constant experience of them. And when such contrivances go wrong they become dangerous and worse than useless. These considerations must be kept well in the forefront when the subject of military anaesthesia in active service on a wholesale scale has to be faced, or, in other words, *in the field*. Peace-time anaesthetics are an insufficient basis; we must go back to the experience of the 1914–18 war. We shall be operating on men in their youthful prime, in sound physical state, a certain number in shell-shocked condition, but not cases of liver or cardiac disease or diabetes or tuberculosis as are met with in civil life.

Nitrous oxide is a splendid safe anaesthetic, but only for minor operations; in major surgery it requires an anaesthetic specialist. It can be ruled out for general war use. The vast majority of war operations are in the major class. In these days of high explosives even a small punctate wound may be found to have much torn tissue that requires free excision. Avertin and paraldehyde, given per rectum from thirty minutes to several hours before operation, are impossible. Nembutal given intravenously requires special skill and care. Evipan sodium and pentothal sodium are too transient. Spinal anaesthesia lies in the hands of those surgeons who feel competent to give it in certain cases. Endotracheal anaesthesia can be reserved for hospitals which specially deal with dental cases. It requires wide-bore endotracheal tubes, cylinders, bag, and face-piece for nitrous oxide.

What was the outcome of experience in the last war? Undoubtedly that the most practical, most easily administered, most frequently used, and most satisfactory anaesthesia was obtained by giving chloroform and ether. In many hospitals this was preceded by a hypodermic injection of morphine 1/4 grain and atropine. Any qualified man could give the anaesthetic. Shipway's apparatus was almost invariably used. Sometimes when a doctor was not available a nursing sister or an R.A.M.C. hospital orderly was employed and very soon learned to do it well. By Shipway's apparatus the time of induction of anaesthesia was shortened by chloroform, which could often produce analgesia before consciousness was lost. It required little practice to know when to switch over to the warmed ether, which then proceeded smoothly by the mere action of steady rhythmical compression of the rubber bulb. Premedication by hypodermic morphine helped considerably to lessen the quantity of anaesthetic required.

In the days following a big action most hospital theatres had to deal with a rapid succession of cases, one patient being no sooner removed than another was on the table, so that the more promptly the patient became unconscious the better for all concerned. Without access to mortality figures, one can safely say, speaking from actual experience, that deaths due solely to overdosage of chloroform and ether were an unknown factor. In the American war hospitals where they had a most marked national fear of chloroform it was noticeable that the American surgeons had to suffer delay and had more trouble in the maintenance of deep anaesthesia than was the case in British and French hospitals.

It would therefore become a great desideratum for any body or committee of anaesthetists who have to decide on the laying down of a scheme of war anaesthesia for general use to resolve to repeat the successful method employed in the last war and to make chloroform and ether (of known reliable brands) administered by Shipway's apparatus a component part of each and every surgical outfit.—I am, etc.,

September 27. G. D. G.

Emergency Treatment of Burns

Sir,—An official statement quoted in your *Supplement* of September 2 (p. 167) advises the use of picric acid. When this is put into practice a large number of cases of eczematous and blistering dermatitis from intolerance is sure to be seen. I know these plans have been worked out with careful consideration for the many factors involved, but I must call attention to the fact that a watery solution of gentian-violet is cheap, effective, non-irritating, antiseptic, easy to use even by the veriest layman, has to a degree a tanning effect, and gives symptomatic relief in second degree burns as picric acid does not.

I do not know how accessible gentian-violet is in England; my source has been Merck's aniline-violet, bought by me in 1-oz. bottles of the crystals for about $0.40. One ounce of the crystals stirred in 3 quarts of water (which need not be boiled) makes the suitable 2 per cent. aqueous (not alcoholic) solution, to be swabbed over the burned skin. It should be put on so as to enter the blisters, beneath the caps of which it forms a coating over the denuded dermis, allays pain excellently, and keeps the skin from contamination with Gram-positive bacteria and fungi. It may be applied to large areas, in adults or infants, without fear of toxicity or the provocation of eczema—advantages over picric acid. In the emergency treatment of burns by local application gentian-violet has no superior, a fact which experience will surely bear out if it is put to the test. The solution does not deteriorate.

Gentian-violet stops the action of staphylococci, fungi, and many streptococci. The streptococci which are not responsive to gentian-violet do respond to sulphapyridine and to moist applications of 1:10,000 bichloride of mercury. Few skin infections occur which cannot be treated with prompt success by the use of gentian-violet, supplemented as indicated by wet packs of bichloride of mercury.—I am, etc.,

Kansas City, September 20. Richard L. Sutton, Jun.

X-ray Examination of Militiamen

Sir,—As one who advocates the periodic mass radiological examination of the "healthy" population as the only logical and worth-while method at present of detecting phthisis in its early and treatable stages, I could not but view with enthusiasm the opinion expressed by Dr. J. V. Sparks in the *Journal* (May 13, p. 1003, and September 23, p. 664) on the need for *x*-ray examination of the chest in militiamen. But the letter from Dr. J. E. Bannen (September 30, p. 702) has checked this enthusiasm and given me food for thought. For in it is introduced the term "arrested"—a clinical, nay, an administrative term that should be avoided by a radiologist at all costs—and there is advocated serial miniature *x*-ray photography, a method still on trial and considered as unreliable by several authorities. Radiological examination of militiamen would without doubt detect an appreciable percentage of early active tuberculous lesions that cannot even be suspected in the few minutes the examining medical officer is allowed to carry out the "complete" examination of the man, but it would also produce a much larger percentage of skiagrams, showing various apical shadows and exaggerated hilar and lung markings, which might lead to the unnecessary rejection of many men—these shadows taking the place with a vengeance of the added or altered sounds at the apices in the last war. Routine radiological examination of militiamen would raise a hornet's nest unless it was carried out by radiologists expert in chest radiography working in conjunction with an experienced tuberculosis physician or, better still, by tuberculosis physicians expert in the interpretation of chest skiagrams with such a radiologist available for consultation. The fact that in many quarters there is still some doubt as to the value of radiography in the diagnosis of phthisis and that discussions on the *relative* merits of physical and radiological examination in this connexion can still take place makes me wonder whether we have at our disposal the number of such trained people that would be required if the policy advocated by Dr. Sparks were adopted. Unless we have, it may be found that radiological examination of militiamen will prove for the military authorities (though not from the public health point of view) far from a blessing.—I am, etc.,

Staines, October 1. G. Gregory Kayne.

Evacuation

Sir,—The intolerable burden which has been placed on rural districts by the Government evacuation scheme cannot be sufficiently realized. As time goes on its effects will become more apparent.

Just at a time when one's nerves are somewhat on the stretch, when every household is worried, when husbands, sons, and relations are being called up to fight, when most of us have extra work to do—at that moment we are not asked but commanded to take evacuees into our houses. One will gladly admit that most of the evacuees are decent people, but even so, whatever rules may be laid down their entry into a private house means more work for the unfortunate housewife, who often is overworked already. In one's consulting room it is becoming increasingly common to see women whose health is being undermined by this worry and overwork.

In addition to those whom we may call the decent evacuees there is a sufficiently large minority of objectionable people to make the whole scheme a scandal and impracticable. I do not think it is using language any too strong to say that in many cases the scum of a town has been poured into a clean countryside with a most callous disregard for the consequences and apparently without the most elementary safeguards for the public health.

Is it not time to review the situation in the light of recent experience? The evacuees would fall roughly into three classes:

(1) Those who could remain in private billets where mutually agreeable.

(2) Those who would be more happy in empty houses, converted public buildings, etc.

(3) Those who require to be in a camp under some sort of discipline where they could be taught the rudiments of personal cleanliness, self-respect, and (incredible as it may seem) the use of a lavatory.

It should be possible to work out some plan whereby the present injustices to both sides are less acute, and in doing so I think our profession, which has an intimate knowledge of the actual living conditions of all classes, might collaborate with the less informed urban authorities.

It is essential that we should know whether the Government, having evacuated these people, is content to leave the country districts to struggle on as best they can or whether it is actively engaged in devising new measures to ameliorate the present unsatisfactory situation. There are limits to what people will stand, and in too many cases these limits have already been reached.—I am, etc.,

Melksham, Sept. 28. I. C. Keir, M.D.

Sir,—In your issue of September 9 (p. 573) you published a short notice of the meeting of journalists summoned by Mr. Herbert Morrison, leader of the L.C.C., on September 4 "to rejoice with him on the completion that day of the evacuation from London of some 650,000 persons." *Audi alteram partem.* The reception areas are not impressed with the efficiency of the L.C.C. The letter in the *Times* of to-day's date (September 29), signed "Dorothea Coke," is an emphatic contradiction of Mr. Morrison's complacency. It ends with the query, "When is the L.C.C. going to wake up to the muddle it has made and send its staff [of welfare workers] down to remedy the shameful conditions it spread through the country."

These are strong words, but in the opinion of many country dwellers entirely justifiable. The L.C.C. apparently took no precautions to avoid the dissemination of vermin, or, if it did, its methods were ineffective.—I am, etc.,

Basingstoke, Sept. 29. Hugh Thursfield.

Sir,—You seem to think that the evacuation system is working well. If you ask general practitioners who go into the homes you will find it is the most unfair system ever devised. No one can say why people in many cases much poorer than the parents should have their home life ruined when plenty of empty houses were at that time available or why parents should not pay their share.—I am, etc.,

Ashtead, Surrey, Sept. 27. C. H. G. Prance, M.R.C.S.

⁂ The annotation in our issue of September 9 appeared under the heading "A Successful Exodus," and tribute was paid in it to the highly efficient way in which the process of evacuation was conducted. We concluded by saying, "There remains to be told, when the time comes, the story of how well the reception areas have risen to their opportunity."—Ed., *B.M.J.*

Medical Students in War

Sir,—May a medical student be permitted to raise a point which arises out of your "Medical Notes in Parliament' of September 23 (p. 667)? Dr. Elliot's reply to Mr. Parker's question in the House of Commons, so far as it was concerned with medical students, seemed particularly irrelevant. He, Dr. Elliot, could not believe that medical students wished to profit by the circumstances of war. Certainly we have no wish to profit in any way, but many of us are finding that in the present circumstances our training and living expenses are costing us very much more than in peace-time. In some areas the cost is nearly doubled, while in many instances students, or their parents, are less able to afford the cost of their training than hitherto. We do not necessarily object to this "tradition of voluntary service," but regard as a most undesirable anomaly a situation where we are not allowed to take up any other form of work and compelled to pay twice as much for "voluntary" work in which we have no option.—I am, etc.,

Oxford, Oct. 1. R. B. Buzzard.

Particulate Nature and Size of Filterable Tumour Agent

Sir,—Although for several years I have been profoundly sceptical of the validity of methods employed to demonstrate the particulate nature and size of the agent of filterable tumours, so far I have refrained from active criticism. It was considered more profitable to confine one's attention to the positive constructive task of trying to show how the phenomena of filterable tumour transmission, and especially the tissue specificity, could be much better explained on the assumption that the causative agent was of a non-particulate chemical nature.[1] The treatment of the subject in the leading article in the *Journal* of September 25 (p. 651) renders it necessary to point out some considerations, of the nature already referred to, which indicate that on this ground alone there is another side to the question than that championed therein. The principal methods in use for the purpose in hand are three in number, based respectively on (1) Poiseuille's law; (2) Stokes's (not Stoke's, as some who have written extensively on the subject have it) formula; and (3) microscopical examination.

Poiseuille's law has reference to the estimation of the pore diameter of a "membrane" possessing, as pores, straight cylinders of uniform small size and of circular cross-section situated between and at right angles to the "membrane" surfaces. The walls of these cylinders, moreover, are rigid, non-elastic, and non-compressible. Further, the determination of the average pore size is arrived at in practice by the measurement of the flow of pure water through the "membrane." In assessing the value of this method as applied to the present problem one may disregard the fallacies that arise through deposition on the membrane surface and adsorption on its pores, and the fact that it is the average pore diameter that is determined. These are of minor importance in the present connexion; although it will be evident that the former eventuality would decrease and the latter, on account of the maximum pores (which give rise to an unappreciated but highly important source of error where the estimation of the size of particles is concerned), effectively increase permeability. A major source of fallacy, which appears to be unsurmountable, however, remains. It may be indicated by remarking that it is incomprehensible how this formula, based as it is on the passage of pure water through rigid-walled cylinders arranged in regular pattern, has been applied so extensively to the determination of the size of elastic compressible particles which are being forced in the process of ultra-filtration through the irregular interstices, which are possibly mere artefacts, of an elastic compressible membrane.

Stokes's law applies to the deposition under the force of gravity of small, smooth, spherical, solid particles of uniform and constant density and size in a liquid of certain density and well defined and constant viscosity. In the application of this law to the problem in hand one may leave out of consideration as relatively unimportant the difficulties that arise from the fact that centrifugal force, not gravity, is employed, with the result that the motion of the particles alters with their distance from the axis of rotation, from the existence of vibrational and convectional disturbance of the fluid under centrifugation, and from the impossibility of avoiding inaccuracies in sampling and in determining in the extracts and centrifugates the concentration of the agent of filterable tumours. This latter drawback is in strong contrast to the accuracy with which the concentration of, say, gold sol may be estimated. That these difficulties may or may not be overcome is a matter of little moment in the final issue, since they are wholly overshadowed by another of greater magnitude and importance, which will now be referred to.

In view of the fact that solid particles such as lyophobe sols can raise the already low viscosity of the continuous phase, water, only by small amounts, and this simply in proportion to the volume of solid matter present, and that on the other hand the presence of small amounts of lyophile sols, such as albumin, may increase the viscosity some hundred times, the varying amounts of albumin in the continuous phase of a tumour extract has very considerable significance in regard to its viscosity coefficient. Further, if the particulate view of the nature of the agent is assumed, we are dealing in tumour extracts not with small, smooth, spherical, solid particles of uniform and constant specific gravity but with rough particles of irregular shape which are quite definitely lyophile elastic and compressible, and therefore of varying and variable density and size. In Stokes's formula, $V=\frac{2r^2(S-S^1)g}{9\eta}$, V is the magnitude of the velocity of the particle, r of its radius, S of its specific gravity, S^1 of the specific gravity of the continuous phase, η of its viscosity coefficient, and g of the gravity constant. Here every quantity on the right side of the equation is subject to uncontrollable and indeterminable variations, a circumstance which places the utilization of the formula for the solution of the present problem entirely out of the question.

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[1] *On Rous, Leucotic, and Allied Tumours, etc.* (London, Lewis, 1928); *Edin. Med. J.*, 1929, 36, 645; *J. Canc. Res.*, 1930, 14, 527; *British Medical Journal*, 1936, 2, 1334, and 1938, 1, 698; *Edin. Med. J.*, 1937, 44, 37.

Finally, ultra-filtration and ultra-centrifugation may in the extreme case, conceivably, at times remove the whole of the agent from a tumour extract. It is not, however, to be argued on this ground that the agent is particulate. The onus of proof that the agent in such a case has not been adsorbed on particulate organic matter, such as cell debris, etc., and so removed, rests on those who hold an opposite opinion. The finding by microscopical examination of particles on the surface of the retaining membrane or in the deposit on centrifugation is of no avail in settling the question, since microscopical examination, alone or assisted by staining methods, has proved incapable of determining the nature of these particles.—I am, etc.,

Aberdeen, September 26. J. P. MCGOWAN.

Routine Tuberculin Testing of Children

SIR,—The introduction of the tuberculin patch test with its simplicity, painlessness, and relative freedom from severe local or general reaction raises the question whether tuberculin testing should not be more generally applied among children attending for medical examination at welfare clinics and the like. Such testing might be expected to result in (1) the discovery of early cases of active tuberculosis in children; and (2) the discovery of unrecognized or inadequately treated cases of adult tuberculosis among the home contacts of tuberculin-positive children.

The Camberwell tuberculosis officer realized the possibility of such a scheme, and with the approval of the medical officer of health the Vollmer tuberculin patch test has been applied during the present year to 350 children, aged between 1 and 4 years, who had attended the five toddlers' consultation clinics in the borough of Camberwell. Eighteen positives have been discovered and these have been referred to hospital for further investigation, including a skiagram of the chest. Of these eighteen, three children have proved to be suffering from pulmonary tuberculosis with sufficient evidence of activity to warrant immediate institutional treatment. The following case is illustrative:

A child aged 1 year was brought to the clinic for her annual examination. The mother said the child was quite well. Examination showed a sturdy vigorous baby of normal weight. The patch test was positive and there was a history of contact. The skiagram showed extensive lung infiltration, and activity was confirmed by a much raised sedimentation rate. After six months' treatment in a sanatorium the child is now progressing well.

In half the positives there was a clear history of contact, although in some of these the adult in question was not receiving treatment, and the occasion was used to exert pressure towards this end. In the remaining nine positives where there was no history of contact a special attempt to discover one by examining home contacts has been made by the tuberculosis officer. So far no new case of adult tuberculosis has been discovered in this way, but in one case such an investigation revealed that infection had occurred from a case of tuberculosis unknown to the child's parents. The case illustrates how mutually advantageous close co-operation between the toddlers' clinics and the tuberculosis dispensary can be:

A 2-year-old child was brought to the clinic for her annual examination. For some months she had not been as bright as usual, and had recently developed a slight cough. Physical signs were indefinite. The patch test was positive, but questioning of the mother failed to reveal any definite story of contact. A skiagram showed opacity of the right upper lobe, and she was sent to a convalescent home as a case of epituberculosis. Inquiries by the tuberculosis officer now revealed that the mother went to work during the day and left the child with a woman. A month previously the husband of the latter had died, but she had not disclosed to the child's parents that the cause of his death was tuberculosis, although frequent contact with the child had occurred. By also failing to disclose to the tuberculosis officer the child's presence in her house, the child had escaped the examination to which other members of the household had been subjected after the man's death.

The discovery within eight months of three cases of active tuberculosis in children, in two of which there were neither symptoms nor signs such as could have allowed the diagnosis to be made at this stage without the evidence afforded by the patch test, is surely striking. Might not the more general introduction of tuberculin testing of young children be a worth-while step forward in the campaign against tuberculosis?—I am, etc.,

London, N.W.1, October 7. DOUGLAS GAIRDNER.

The "Iron Lung" in Treatment of Scoliosis

SIR,—I am very grateful to Mr. S. Alan S. Malkin (*Journal*, September 30, p. 702) for trying out this method of treatment which I suggested in my letter in the *Journal* of February 25 (p. 416). His statement that, in selected cases, improvement has been very marked is particularly welcome. Of the two hospitals with which I am connected, at one the apparatus has not yet been fully assembled, while at the other it has been in constant use for the treatment of paralytic cases. When hospital conditions become more stabilized I shall endeavour to give the method a complete and prolonged trial. Meanwhile, I strongly endorse Mr. Malkin's opinion that this line of treatment should be tried in other centres.—I am, etc.,

Hove, Sept. 30. J. M. TURNER, F.R.C.S.

The Services

DEATHS IN THE SERVICES

Surgeon Commander EDWIN FOLLIOTT, R.N. (ret.), died at Salisbury on September 21. He was educated at St. Bartholomew's Hospital, and took the M.R.C.S., L.R.C.P. in 1896. After filling the post of assistant house-surgeon at Shrewsbury Infirmary he entered the Royal Navy, attained the rank of surgeon commander on May 25, 1911, and retired soon after the end of the war of 1914–18, through which he served, receiving the medals. He then specialized in tuberculosis work, serving as clinical assistant to the Plymouth Tuberculosis Dispensary and as assistant tuberculosis physician at Cardiff, after which he became tuberculosis physician to the King Edward VII Welsh National Memorial Association, and tuberculosis consultant to the Aberdare, Merthyr, and Mountain Ash general hospitals, and to Merthyr Infirmary, and medical officer of Pontsarn Tuberculosis Hospital.

Colonel JAMES MEEK, C.B., late R.A.M.C., died at Belfast on July 5, aged 77. He was born on November 20, 1861, and was educated at Queen's College, Belfast, where he gained an entrance scholarship. He graduated M.D. and M.Ch. of the Royal University of Ireland with honours, and gained the first Peel exhibition; he subsequently took the D.P.H. of the London Colleges in 1905. Entering the Army as surgeon on May 30, 1885, he attained the rank of Colonel on August 3, 1914, and retired on November 20, 1918. He served in the Sikkim War of 1888, gaining the frontier medal with a clasp; in China in 1900, on the hospital ship *Maine* (medal); in South Africa in 1900–2, first on the hospital ship *Maine* and later in operations in the Orange River Colony and in the Transvaal (mentioned in dispatches, *London Gazette* of June 17, 1902, Queen's medal with three clasps); and in the war of 1914–18, when he was mentioned in dispatches in the *London Gazette* of February 17 and June 22, 1915, in which year he received the C.B.

No. 37

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended September 16, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	15	2	9	—	—	17	1	8	1	—
Deaths		—	2				—	2		
Diphtheria	823	36	179	32	11	1,213	159	143	54	28
Deaths	28	1	2	1	—	21	3	2	—	—
Dysentery	34	2	20		—	40	13	25		—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	3	—	—		—	6	1	—		—
Deaths		—	1				—	—		
Enteric (typhoid and paratyphoid) fever ..	77	2	7	3	7	45	3	8	11	—
Deaths	3	—	—	—	—	5	—	—	—	—
Erysipelas			59	2	3			44	8	6
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years ..										
Deaths	48	4	19	11	13	56	11	7	7	7
Measles			7		4			19		3
Deaths	2	—	—	—	—	3	2	1	—	—
Ophthalmia neonatorum	64	3	22		1	94	10	35		2
Deaths										
Pneumonia, influenzal*	266	14	4		2	445	33	7		8
Deaths (from influenza)	10	—	3	—	—	15	6	—	1	2
Pneumonia, primary			103	5				155	4	
Deaths		—		7	2		9		—	4
Polio-encephalitis, acute	2	—				7	2			
Deaths		—					—			
Poliomyelitis, acute	29	8	1	1	1	76	7	11	—	—
Deaths		1	—				—	—		
Puerperal fever	3	3	15	3	1	4	4	15	3	—
Deaths		—					—			
Puerperal pyrexia	150	9	16		1	171	18	14		—
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,139	32	191	45	58	1,683	131	355	63	73
Deaths	3	—	—	—	—	2	—	1	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough			13		5			117		13
Deaths	6	2	1	1	—	8	1	4	—	1
Deaths (0–1 year)	251	26	67	39	16	289	46	48	23	9
Infant mortality rate (per 1,000 live births) ..						48	38			
Deaths (excluding stillbirths)	4,017	607	562	153	123	4,100	786	510	154	119
Annual death rate (per 1,000 persons living) ..			11.4	10.3	10.8	10.1	10.0	10.4	10.4	10.5
Live births	6,015	845	829	324	216	6,230	1,118	763	387	209
Annual rate per 1,000 persons living			16.8	21.8	19.0	15.3	14.2	15.5	26.2	18.5
Stillbirths	233	22	35			250	31			
Rate per 1,000 total births (including stillborn)			41			39	27			

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

There has been little change in the incidence of the principal infectious diseases during the last week or two. From many quarters there have been reports of an increase in the incidence of diphtheria and scarlet fever in rural districts due to the reception of susceptible subjects, but these do not appear to have been outbreaks of any magnitude. Some local authorities in these areas have expressed doubt as to the adequacy of the isolation hospital accommodation at their disposal, and are making plans to enlarge it. There has been little change in the last few weeks in the incidence of enteric fever and cerebrospinal fever, both of which tend to increase under war conditions, and the figures for acute poliomyelitis remain low—from a third to half of those recorded last year.

Owing to delays incidental to war conditions in collecting the weekly returns from certain districts the epidemiological table was omitted last week and appears in the present issue. It is hoped that as communication improves it will be possible to revert to the normal procedure. The figures for the median values for the preceding nine years are no longer available, as the data are not comparable in all material respects, and the column is therefore being discontinued for the time being.

Obituary

We regret to announce the death of Dr. **THOMAS JOHNSTONE**, formerly of Ilkley and Harrogate, who died on September 17 at the age of 86. Dr. Johnstone qualified M.B., C.M., and L.M. in 1874 and proceeded to the M.D.Ed. in 1877. In 1887 he took his M.R.C.P.Lond. After qualification Dr. Johnstone settled at Ilkley, where he remained for nearly forty years, and was appointed medical officer of health just over fifty years ago. He was also medical officer to the Ilkley Hospital and Convalescent Home and to the Semon Home. He acted as consulting physician to Ilkley Coronation Hospital, was physician to the Ben Rhydding Hydropathic Establishment, and senior resident physician to the Crichton Royal Mental Hospital, Dumfries. Subsequently he moved to Harrogate, and during the last war was engaged in work at the Ripon Dispersal Camp. A man of diverse interests, he was a director of one or two business concerns and was an energetic Freemason. Dr. Johnstone revised and edited a translation of Kraepelin's *Lectures on Clinical Psychiatry*. Among his contributions to medical literature he wrote on the clinical measurement of fatigue and on dementia praecox. He was a member of the British Medical Association for sixty-five years.

The sudden death on September 17 of Dr. **LAURENCE JOHN HONEYWILL** from septicaemia and pyaemia at the early age of 27 has come as a great shock to his friends. He was one of the most brilliant students of recent years at University College Hospital, and there was every reason to anticipate that he would have a very distinguished surgical career. Honeywill received his medical education at University College Hospital, entering the medical school there in 1933 with a Goldsmid Exhibition. He later shared the Magrath Clinical Scholarship and won the Atchison Scholarship awarded to the student "who within a period of three years reckoned from the date of his entry to the school has shown the best work and greatest proficiency as a student of the medical school and hospital." He qualified M.R.C.S., L.R.C.P. in 1936, in 1937 obtained the F.R.C.S.Eng., and a year later the M.B., B.S.Lond., with the University gold medal and distinction in surgery and obstetrics. After qualifying he was house-surgeon, house-physician, and casualty surgical officer at University College Hospital. He leaves a widow and an infant daughter.

Dr. **CHARLES COTTON**, F.R.C.P.Ed., a well-known archaeologist, died on September 28 at The Precincts, Canterbury, aged 83. Born at Twickenham on February 7, 1856, he studied medicine at St. George's Hospital, and qualified M.R.C.S.Eng. and L.R.C.P.Ed. in 1879, afterwards proceeding to the Membership and the Fellowship of the Edinburgh College. In 1895 he was appointed physician to the Ramsgate General Hospital and Seamen's Infirmary, and in 1910 became County Director of Voluntary Aid Detachments and Commissioner under the St. John Ambulance Brigade for the Canterbury area. Dr. Cotton was a prominent member of the Kent Archaeological Society, and wrote learned papers for the *Transactions of the Royal Historical Society* and *Archaeologia Cantiana*. His writings included "A Kentish Cartulary of the Order of St. John of Jerusalem."

The untimely death of Dr. **JOHN GRAY**, reader in pathology at the British Postgraduate Medical School, will be felt keenly, not only by the many pathologists who knew and appreciated his work but also by a wide circle of friends in London, Edinburgh, and Aberdeen. Gray was educated in Edinburgh, and, like so many of his generation, went straight from school to war service. At the end of the war he began to study medicine at Edinburgh University, where he had a brilliant career. After graduating M.B., Ch.B. with honours in 1923, he was appointed part-time assistant in the anatomy department, and engaged in research on the embryology of the pituitary gland. There followed a period as house-physician at Edinburgh Royal Infirmary before he was appointed lecturer in morbid anatomy in the University of Aberdeen, a post he held with distinction for nine years from 1925 to 1934. It was then that Gray was at his best, for almost all the time he was in London he was a sick man. In Aberdeen he carried out important investigations on nephritis. His first paper on this subject was accepted for the M.D. of Edinburgh University, and was awarded a gold medal. Subsequently he carried this work further and expanded it into a Special Report (No. 178) for the Medical Research Council. Shortly after the publication of this authoritative treatise Gray went to London and joined the staff of the British Postgraduate Medical School as reader in pathology. It seemed in every way an ideal appointment, but his health, never robust, broke down completely, and for the last few years Gray was a semi-invalid. No one who had the privilege of working with him in this period will forget his unfailing cheerfulness under increasing difficulties. A brilliant pathologist, Gray hid his wide learning and experience under a shy, even diffident, manner; this in itself was typical of the man—kind, sincere, and modest to a fault. He will be greatly missed.

Medical News

The Harben Lectures for 1939 of the Royal Institute of Public Health and Hygiene on "The Physiological and Economic Basis of Nutrition" will be delivered by Sir John Boyd Orr, F.R.S., at 28, Portland Place, W., on Monday, Tuesday, and Wednesday, October 16, 17, and 18, at 3 p.m. In the first lecture Sir John Orr will speak on dietary standards, in the second on assessment of state of nutrition, and in the third on the public health, agricultural, and economic aspects of the nutrition problem. Admission to the lectures is free, and application for seats should be made to the secretary at 28, Portland Place, W.1.

A meeting of the Royal Society of Tropical Medicine and Hygiene will be held at 26, Portland Place, W., on Thursday, October 19, at 4.30 p.m., when Sir Rickard Christophers, F.R.S., will deliver his presidential address on "Malaria in War."

A series of ten lectures to clergy and ministers on psychological problems arising out of war conditions, in particular air raids, is being given on Fridays at 11 a.m. in the Milton Hall, Manchester. It has been arranged by the Manchester Branch of the National Council for Pastoral and Medical Co-operation.

The eighth Pan-American Congress of the Child will be held at San José, capital of Costa Rica, from October 12 to 19. The congress will be divided into six sections devoted respectively to medical paediatrics, surgical paediatrics, infantile hygiene and eugenics, education, social assistance, and legislation and sociology.

The thirty-second Italian Congress of Dermatology and Syphiligraphy will be held at Bologna from October 7 to 12, when a bust of the celebrated Professor Domenico Majocchi of Bologna will be unveiled. The chief subjects for discussion are inguinal lymphogranulomatosis and tuberculosis of the skin.

Owing to the war there will be no meetings of the Harveian Society of London until further notice.

The Central Hospital Supply Service of the Red Cross and St. John, the department responsible for organizing hospital supplies, has moved from 41, Lowndes Square, London, S.W., to 2, Lowndes Street.

Under war-time arrangements pre-clinical students of London medical schools are located temporarily as follows: St. Bartholomew's and the London Hospital at Cambridge; Charing Cross, St. George's, King's College, and Westminster at Glasgow University; Guy's at Sherwood Park, Tunbridge Wells; St. Mary's at Manchester University; Middlesex at Bristol University; Royal Free at St. Andrews and Aberdeen Universities; St. Thomas's at Oxford; and male students of University College at Aberystwyth (University of Wales). Students in their clinical years have for the most part been distributed over the ten sectors whose apices are at their own teaching hospitals. The administrative offices of the University of London are now at the Royal Holloway College, Englefield Green, Surrey.

At a meeting of the General Board of the Westminster Hospital last week the measures taken in accordance with the Ministry of Health scheme for emergency medical services were reported. While the Ministry had agreed to pay the cost of reserving 200 casualty beds, the income of the hospital, at a time when it had just entered into occupation of new buildings, had been seriously affected. It had been necessary to make the hospital, nurses' home, and medical school light-proof, and the cost of this alone, amounting to over £3,000, fell upon the general funds of the hospital. The ninety-three beds reserved for civilian sick were being rapidly filled up. The governors agreed that these should be increased by thirty, and that twenty-four more should be reserved for private patients.

The president and honorary secretary announce that the condition of war prevents the Ligue Internationale Contre le Rhumatisme from continuing its activities. The bureau at Amsterdam will be closed, and this will discharge council members, representatives, substitute representatives, editors, and members of the Ligue Internationale from their rights and duties.

Arrangements for the removal by stages of 35,000 additional school children from the evacuation areas in England have now been authorized by the Ministry of Health. In some districts the movement has started this week. These children were registered by their parents when, following completion of the main evacuation at the beginning of September, the Government decided to afford a further opportunity for evacuation of unaccompanied children. As billets become ready and transport is arranged, parties will be dispatched according to arrangements made between the evacuating area and the corresponding receiving area under the general direction of the Ministry of Health and the regional staffs. All the children will be medically inspected.

The July issue of the *Bulletin of the History of Medicine* is devoted to the transactions of the fifteenth annual meeting of the American Association of the History of Medicine held at Atlantic City, New Jersey, on April 20 and May 1, 1939.

The appeal of the Belgian Red Cross to athletic and philanthropic societies for blood donors aged from 20 to 60 has met with a gratifying response. There are at present fourteen centres for blood transfusion in Belgium.

Universities and Colleges

UNIVERSITY OF OXFORD

No serious reduction is anticipated in the numbers of medical students, as the age limit is 20, and not 18, and any student with two terms' anatomy and physiology is reserved. Dr. K. J. Franklin is deputizing as Dean of the Medical School for Dr. B. G. Macgraith, and Dr. A. M. Cooke is Clinical Sub-Dean; Dr. Cooke is also Assistant to the Regius Professor of Medicine. Pre-clinical students from St. Thomas's Hospital have moved to Oxford, and to conform with the arrangements usual at St. Thomas's plans have been made for a ten-weeks instead of an eight-weeks term this Michaelmas. Oxford medical students began work on October 2, two weeks before the rest of the University. Courses will conform so far as possible to the normal; but there must be some adaptation to the emergency circumstances. In view of the disturbed arrangements in London clinical schools, the University Department of Medicine is offering to its own students only a complete second B.M. course in the Radcliffe Infirmary and associated hospitals, provided the war lasts that long. The initial ten-weeks course (general pathology and bacteriology and an introduction to clinical work) began on October 2. The Department is also offering facilities, but not set courses, to a limited number of its own students whose clinical courses, begun elsewhere, have been interrupted by the war. Applicants should write to the Clinical Sub-Dean, the Radcliffe Infirmary, Oxford, stating what they have already done, what they still have to do, and when they propose to sit for the Final B.M. examination. By a recent decree those students who have passed all the examinations for the first B.M. are deemed to have passed all the examinations requisite for the degree of B.A.—that is, they will not, as most of them normally do, interpose a year of study for the Final Honour School of Animal Physiology between the first and second B.M. courses. At the moment the arrangements for the 1939 B.M. examinations stand, but there may be changes in 1940. The first B.M. examination begins on December 4, and the second B.M. examination on December 6, 1939. The D.O. course and examination are suspended for the academic year 1939–40. The address of the Dean of the Medical School remains as before —namely, Department of Medicine, the Museum, Oxford.

UNIVERSITY OF LONDON

London School of Hygiene and Tropical Medicine

It has been decided that the office and certain departments of the London School of Hygiene and Tropical Medicine shall remain for the present at the school building in Keppel Street, Gower Street, W.C. Although courses normally lasting an academic year have necessarily had to be discontinued for the time being, it is hoped in the near future to provide short courses of instruction in tropical medicine and hygiene. The school library will be open between the hours of 10 a.m. and 5 p.m. (Saturdays 10 a.m. and 12 noon), and the librarian will be glad to answer inquiries by post or telephone.

UNIVERSITY OF GLASGOW

At a graduation ceremony held on September 27 the following medical degrees were conferred:

M.B., Ch.B.—*A. W. Kay, *D. Struthers, *G. C. McKinlay, †A. Muir, †A. Allison, †W. D. Buchanan, †H. B. Young, † C. M. Steven, †W. Blair, †H. N. Munro, †K. R. Urquhart, ‡A. H. Lauder, †J. Milne, † Alexina MacL. Paterson, †D. G. Wright, †Isabella M. Kerr, G. F. Allan, G. R. Anderson, W. Anderson, B. Andrew, Janey C. A. Arnott, J. Ballantine, H. Barrowman, I. S. Bergius, A. Berkovitch, J. Black, Catherine I. Blyth, Enid E. Brackenbury, A. Brown, Marrion A. McK. Brown, O. T. Brown, W. Brown, Janet M. Bruce, Margaret L. Bryson, A. M. Buchanan, J. R. F. Buchanan, M. Buchanan, Helen D. Burns, Margaret Callaghan, H. C. Campbell, J. L. Campbell, W. R. S. Campbell, D. Canning, Agnes E. D. Cathcart, M. R. Chassels, S. Childs, S. Citron, J. Corbet, R. L. Coulter, L. Couper, J. M. Crawford, Muriel C. H. Cunningham, J. P. Currie, R. G. Dalziel, Barbara M. Davidson, Isabel Davidson, P. W. McL. Davidson, A. S. Dawson, A. Dick, J. Donaldson, J. L. Douglas, H. Duff, H. G. Easton, G. M. Edington, R. S. Edington, H. Fairlie, J. Ferrier, R. Finlay, J. W. Fleming, J. U. Forbes, J. A. Fraser, J. F. M. Frew, Marion S. Gardner, Marjory A. Garrey, W. M. Gibson, J. G. Gillan, Janet B. Grant, S. Haase, H. L. Hart, Mary B. Howat, T. K. Howat, J. F. K. Hutton, Jesse D. Johnston, W. C. Johnston, L. G. Jubb, G. M. Kesson, A. W. Lees, G. Leslie, Milicent H. S. Leslie, Brenda E. Linck, R. Livingstone, W. P. D. Logan, J. Loudon, Jean M. McArthur, J. J. McCall, A. I. McCallum, J. McComb, E. L. F. McConnachie, J. S. McCrae, A. C. Macdonald, I. A. Macdonald, T. L. Macdonald, J. L. MacDougall, H. M. Marfarlane, I. W. Macfarlane, I. D. Macfie, P. G. McGrath, W. Q. McIntyre, A. McN. McKelvie,

W. B. McKenna, W. R. Mackie, C. M. McLean, A. MacLellan, I. McLennan, J. A. MacLeod, R. G. MacLeod, Helen McC. McNeish, P. F. Maguire, S. S. Mair, K. C. Matheson, H. J. B. Miller, R. I. Mitchell, R. Montgomery, Greer C. Murray, Margaret K. Murray, R. Murray, J. C. Mustardé, R. S. Patrick, R. Paul, D. Raeside, E. Rentoul, W. D. Richardson, Mary McC. Richmond, W. D. Ritchie, R. B. G. Robertson, N. O. Rodger, J. Rogers, A. M. Roy, D. Salamon, J. Scobbie, Dorothea H. Graham-Service, F. Shaw, J. Simpson, J. C. Simson, J. G. Smith, Jean McC. Smith, P. Sommerville, W. Steele, Elizabeth M. Stephen, Mary Sullivan, J. D. Thomson, Janet Todd, J. W. Totten, J. A. Urquhart, R. Waddell, F. M. Wainman, A. P. Walker, R. T. B. Watson, J. Weir, W. P. Weir, Margaret E. Wells, Janet C. Willock, Margaret P. Wilson, R. M. Wink, G. M. Wood, Marion T. Wright, Eileen S. M. Wybar, A. K. Young.

* With honours. † With commendation.

Andrew Watt Kay gained the Brunton Memorial Prize, awarded to the most distinguished graduate in medicine for the year 1939.

The West of Scotland R.A.M.C. Memorial Prize was awarded to Andrew Watt Kay as the candidate with the highest aggregate marks in surgery, medicine, and midwifery in the Final M.B., Ch.B., examinations held during 1939.

The Macewen Medal in Surgery was awarded to David Struthers as the candidate who obtained the highest aggregate marks in surgery in the Final M.B., Ch.B. examinations held during 1939.

The Stockman Medal was awarded to Hamish N. Munro as the candidate who obtained the highest aggregate of marks in the professional examinations in materia medica and therapeutics and medicine (written, oral, and clinical), excluding paediatrics, in 1939.

The John W. Weir Prize was awarded to Andrew Muir as the candidate who obtained the highest aggregate number of marks in midwifery and diseases of women in the final degree examinations in medicine held in 1939.

GUY'S HOSPITAL DENTAL SCHOOL

It is proposed to reopen the Guy's Hospital Dental School on November 1 at a large clinic one and a half miles distant from Tunbridge Wells. Provision is being made for students in all stages of their course, including pre-medical studies. The clinic is situated in the neighbourhood of the base hospital of the Guy's Sector. There will be a subsidiary clinic in which conservative work, extractions, and prosthetic work will be carried out actually in Tunbridge Wells. Accommodation will be provided in the School for some of the students. Further particulars may be obtained from the Sub-Dean, Guy's Hospital Dental School, London Bridge, S.E.1.

Medical Notes in Parliament

Mr. CHAMBERLAIN made a statement in the House of Commons on October 3 about the war. He said that if peace proposals were made the British Government would examine and test them. No such proposals had yet been received.

The Finance Bill was read a second time in the House of Commons on October 2. Replying to the debate Sir JOHN SIMON mentioned that cosmetics had been put on the list of prohibited imports. During the preliminary debate on the Budget Resolutions Sir ARNOLD WILSON said on September 28 that many would welcome a tax on medicines, even including healing medicines, provided a small sum were earmarked for the medical health services of the nation. Sir FRANCIS FREMANTLE, speaking on September 29 on a proposal to reduce the sugar duty, said enormous damage was done to the teeth of children by confectionery, and that dental decay was at the root of rheumatism. The motion to reduce the duty was defeated. Mr. BOOTHBY, speaking on the Finance Bill on October 2, referred to the case of a Harley Street physician, with a very high rent, who had been making sums of anything from £5,000 to £10,000 a year, and now found himself on Government work in a hospital at a salary of £400 a year; yet he had to pay tax on the very large sums he had earned in recent years. Sir JOHN SIMON intervened and said: "What my hon. friend is saying is not in accordance with the provisions of the Bill or what I said in my speech. I am so conscious of cases of the sort that he has quoted that I explained in my Budget speech that instead of calling upon such a taxpayer to pay in respect of those thousands of pounds earned in past years he would be entitled to substitute his actual earnings of this year. That is an enormous alleviation."

The Parliamentary Medical Committee met at the House of Commons on September 28, with Sir Francis Fremantle in the chair, and will continue regular meetings during the war. Sir Francis Fremantle, as representative on the Central Emergency Committee of the British Medical Association, reported on the present position of the profession. The Committee discussed the under-employment of medical men in certain public services, the establishment of military hospitals in the United Kingdom, the interchange of patients between civil and military hospitals, and the medical treatment of the civil population. It also considered the admittance of patients to hospitals, their evacuation to more distant hospitals, and evacuation of patients to their homes. Petrol rationing to medical men and the employment of radium were discussed. Subsequently Sir Francis Fremantle and Dr. Howitt went as a deputation to Dr. Elliot, put forward considerations on several subjects named above, and found that he is active to rectify defects.

Hospital and Medical Services for Civilians

On September 26 Mr. SORENSEN asked the Minister of Health whether he was aware of the acute suffering and hardship caused by the removal of certain patients from hospitals to their homes, by the refusal of beds to patients needing special treatment, and by the relative scarcity of medical services in reception areas, and also of the number of doctors, nurses, and other medical staff on duty but performing no immediate service in hospitals allocated to deal with air raid victims. Miss HORSBRUGH said that the Minister was aware that difficulties and hardships had inevitably arisen from the far-reaching steps which were of necessity taken to deal with the possibility of large numbers of casualties from air raids. Numerous steps had been taken to enable the best possible use to be made of the hospital accommodation and medical and nursing personnel at present available. Arrangements had been made to release for part-time service in private practice a number of doctors at present employed in the Emergency Medical Service. All possible publicity had been given to several announcements that patients whose condition required hospital treatment, whether in-patient or out-patient, should certainly receive it. The Minister was continuing to keep the situation closely under review.

Health of Evacuated Children in Scotland

On September 26 Mr. HENDERSON STEWART asked the Secretary for Scotland how, in view of the large sums spent on health services in the cities of Scotland and the repeated assurances that these services were adequate and efficient, he accounted for the serious bodily condition of so many of the persons recently evacuated; and whether he would order an immediate inquiry into the health services of the cities of Scotland. Mr. COLVILLE said there had been a tendency to exaggerate the position, but that a proportion of the evacuated children were suffering from skin diseases or were in a verminous condition. He did not consider that an inquiry such as Mr. Henderson Stewart suggested would serve a useful purpose in present circumstances. He had arranged that the local authorities of sending areas would make a thorough medical inspection and give whatever treatment was necessary before any further children were evacuated. The evacuation took place in conditions of urgency, at a time when the supervision of the children was curtailed because of school holidays.

Care of Expectant Mothers in Reception Areas

Dr. ELLIOT stated on September 28 that as normal public health services included organized visiting of expectant mothers, he was taking steps to ensure that such services were available in reception areas for evacuated women as well as for the ordinary population. Steps for augmenting health visiting staff were primarily a matter for the welfare authorities in the different areas to decide upon. He would shortly issue a circular giving advice to welfare authorities on this and other matters relating to the health of evacuees. He had no particulars showing to what extent health visiting staff had been transferred from evacuated to reception areas. An extra allowance to the householder for undertaking the additional responsibilities of attending upon an expectant mother during confinement was applicable in cases where, by agreement with the householder, arrangements were made for the confinement to take place in the billet. The usual arrangements were for the confinement to take place in a maternity hospital or maternity home. The availability of these arrangements should obviate any difficulty in cases where a householder who was otherwise willing felt unable to provide lodging and attendance for the mother for the payment of 10s. a week.

Patients evacuated from Hospitals

Miss Rathbone asked on September 29 whether any systematic review had been or would be made through the hospital or medical authorities or otherwise of all the patients evacuated from hospitals to their homes at the beginning of the war for the purpose of ascertaining whether they were receiving adequate medical and nursing attention. Dr. Elliot in reply said all hospitals had been instructed to provide in-patient treatment for all in need of it. If the medical advisers of patients requiring hospital treatment gave a certificate to this effect the patients should be able to obtain admission to hospital, whether cases evacuated from hospitals to their homes at the beginning of the war or fresh cases. He did not think it necessary to call for a special review of the cases sent home by the hospital authorities at the beginning of the war.

Dr. Elliot, in reply to further questions, said all these cases were covered by domiciliary services, or through the insurance schemes, or through the out-patient department of the hospitals. If any almoner, district nurse, or anybody else came into contact with any case which required hospital treatment they should refer the matter to the patient's medical attendant, or, if the patient had no medical attendant, to the public assistance authority. Only on the certificate of a medical practitioner would a patient be admitted to hospital. In that way the population was fully covered.

Evacuation Problems

Replying, on September 29, to a question by Sir Ralph Glyn on evacuation, Dr. Elliot said the Ministry of Health, both at headquarters and through the regional organizations in the country, constantly sought to adjust the difficulties and hardships to which so large a movement, carried through of necessity in so short a time, inevitably gave rise. Full account was taken of the many reports, official and unofficial, from the receiving areas. Improvements and developments, and revision of policy where called for, were indicated in communications to the local authorities, such as Circular 1871 recently issued. A circular on medical arrangements would shortly be sent out. Representations on the necessity for adequate medical examination of evacuated school children would receive full weight.

Supply of Inhalers for Lung Conditions.—Mr. Sorensen asked on September 26 whether the Government had considered the provision of an inhaler or apparatus for the immediate treatment of the lungs of sufferers from a gas attack, and whether its inclusion in official air raid precautions outfits would be recommended. Miss Horsbrugh replied in the affirmative. She said Sir John Anderson was arranging for the supply to hospitals of inhaler apparatus for those suffering from lung conditions, whether caused by gas or otherwise.

Notes in Brief

Nearly one-third of the mothers evacuated from Glasgow have returned.

Sir Victor Warrender states that the Army recruits physical development depots were abolished on mobilization, and the buildings have been allotted to other uses.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

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The Telegraphic Addresses are
EDITOR OF THE *BRITISH MEDICAL JOURNAL, Aitiology, Westcent, London*
SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the Office of the Cumann Dochtúirí na h-Éireann (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin;* telephone 62550 Dublin.)

QUERIES AND ANSWERS

Dermatological Out-patients

Dr. P. Farrell (London, E.3) writes: Can anyone tell me where I can send my poorer patients for a second opinion on dermatological questions? I have made so many abortive telephone calls that I thought a general inquiry might better achieve the result I seek.

Purchase of Medical Books

Mr. H. J. McCurrich, M.S., F.R.C.S. (Hove, Sussex), writes: I should be glad to know why I can buy any medical book at a local bookseller's at list price and the local bookseller gets a profit on the transaction, yet I am inundated with circulars of medical publishers, who send me a list of medical books with the net prices and the cost of postage. It is usually cheaper to buy direct, but in the case of medical books the reverse is the case. I submit that not only should the publisher pay postage, but should allow discount to the medical profession, as drug manufacturers do, so that it comes to the same thing if the publisher sells to a bookseller or a doctor, but a doctor buying direct saves the middleman's commission. Meantime, when it is essential to exercise every economy, I would suggest to my colleagues that they buy medical books at list prices from their usual bookseller.

LETTERS, NOTES, ETC.

Second Attack of Scarlet Fever

Dr. Sydney Tibbles (London, W.1) writes: In 1914 I had a second attack of scarlet fever following one in infancy. A doctor friend sent for Dr. Porter, M.O.H. for Marylebone, who sent me to the London Fever Hospital for the first six weeks of the war. Probably the infection came from children seen at the Miller General Hospital when acting as oculist to the Greenwich Education Committee.

Mr. Bumble Misquoted

Dr. W. B. Bennett (Liverpool) writes: The writer of the medico-legal article in the *Journal* of September 9 (p. 590) probably thinks he is quoting Dickens when he describes the law as "a Hass," but Mr. Bumble said "a Ass." I suspect the numerous writers who are responsible for this misquotation have never read Dickens, but are merely quoting one another.

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WEIL'S DISEASE IN THE NORTH-EAST OF SCOTLAND

AN ACCOUNT OF 104 CASES*

BY

L. S. P. DAVIDSON, B.A., M.D., F.R.C.P.Ed.
Professor of Medicine, the University of Edinburgh

AND

J. SMITH, M.D., F.R.C.P.
Bacteriologist, the City Hospital, Aberdeen

During the past few years increasing attention has been paid to the clinical, bacteriological, and epidemiological aspects of Weil's disease, with the result that it has been found to be much more prevalent and more widely distributed than was originally anticipated.

In 1934 (Davidson *et al.*) we published a clinical and bacteriological study of fifteen cases of this disease, twelve of which occurred in fish workers in Aberdeen. We suggested that workers among fish must be included in the occupational groups especially liable to Weil's disease. In 1936 (Davidson and Smith) we described the clinical manifestations and the biochemical changes in the blood and urine of forty-one cases, forty of which occurred in fish workers. Our bacteriological investigations established the connexion between the carriers of the disease (infected rats) and the sufferers from the disease (infected fish workers) through contaminated water and slime in the fish-cleaning and curing establishments. Later in the same year we showed that 24.3 per cent. of samples of blood removed from 210 fish workers who were in normal health gave a positive sero-reaction in dilutions ranging from 1 in 30 to 1 in 1,000, while in a control series of tests carried out on 406 samples of blood removed from individuals not engaged in the fish trade no positive reactions were obtained. From our experience we suggested that Weil's disease occurs in Aberdeen in three grades: (1) where the infection is so mild that symptoms are insignificant or absent; (2) where infection is moderate and the symptomatology is influenzal in type with no apparent jaundice; (3) where the infection is severe, with the characteristic picture described below. In the same paper we submitted to the fish trade our suggestions for the prevention of Weil's disease, which included a joint organized campaign for the extermination of the rodents, the rendering of premises rat-proof, the maintenance of a higher standard of cleanliness, and the use of a hypochlorite solution known as "chloros," which we found to have a lethal effect on leptospirae in a dilution of 1 in 4,000 without producing any deleterious effects that might interfere with marketing arrangements.

In the present communication we wish to describe the clinical manifestations of 104 cases of Weil's disease that have occurred in the North-East of Scotland between 1934 and 1939, and to discuss some of the bacteriological and serological investigations which we have carried out.

Analysis of Cases of Weil's Disease in Great Britain

In the analysis given below cases are included only if the clinical diagnosis was adequately confirmed by bacteriological or serological tests. Previous to 1922 proof of the occurrence of Weil's disease in Great Britain had never been obtained. In that year Manson-Bahr *et al.* (1922) isolated *L. icterohaemorrhagiae* from the blood of a seaman who, four days previously, had fallen into the Thames. In 1924 Gulland and Buchanan described an outbreak of epidemic jaundice among miners in East Lothian. Later Buchanan (1927) reported the clinical and bacteriological findings in twenty-two cases of Weil's disease. Alston and Brown (1937) reviewed the literature and stated that between July, 1933, and February, 1937, 142 cases with twenty-two deaths had been reported in various parts of Great Britain. The majority of cases had occurred in individuals employed as fish workers (forty-six), coal miners (thirty-four), and sewer workers (nineteen). More recently cases have been reported by Murgatroyd (1937) in a farm worker, by Stuart (1938, 1939) in tripe workers and sewer workers in Glasgow, by Robertson (1938) in individuals bathing in a stream in Hampshire, and finally by Rees (1939) and Sladden (1939) in miners in South Wales. The total number of cases in Great Britain in which the clinical diagnosis has received adequate bacteriological confirmation is therefore 185. To that number must now be added another sixty-three cases described in this communication for the first time. The grand total is accordingly 248, of which 109 have occurred in fish workers. Since the incidence of leptospiral infection in rats in Aberdeen (27.3 per cent.) is no higher than that found elsewhere in Great Britain, the large number of cases among fish workers and the frequency with which immune bodies can be demonstrated in the blood of healthy workers in the fish trade (24 per cent.) justify the conclusion that the risk of contracting infection is greater in that trade than in any other in this country.

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* Read in opening a discussion at a joint meeting of the Sections of Services and Tropical Medicine and Public Health at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

Occupational Incidence and Geographical Distribution of Cases in Aberdeen

Of 104 cases reported in this paper ninety-eight occurred in fish workers (filleters, curers, porters, and carters). The remaining six were in farm workers (two), labourers constructing sewers (two), and an engineer in a rag factory, and one arose from harbour immersion. One case occurred in Aberdeenshire and three in Kincardineshire, the remainder arising in the city of Aberdeen. A study of the streets in which the one hundred patients were employed showed that ninety-seven worked in a small area adjacent to the harbour and the fish market.

An investigation into the distribution of the ninety-seven cases in relation to the numerous fish-curing yards in Aberdeen showed that infection had been contracted in no fewer than fifty-three different establishments. In each of thirty-six yards only one case had occurred, whereas in four yards six to eight individuals developed the disease. Further investigation revealed the fact that the number of workers in the yards with six to eight cases was, on the average, six to eight times greater than the number employed in the establishments in which one case had developed. It may be presumed, therefore, that the variation in the incidence of the disease in the different yards is at least largely explicable on the basis of the number of workers exposed to infection. It is worth noting that one firm with a large number of employees has never had a case of Weil's disease during the past five years. Accordingly we investigated the working conditions, and found that the type of work undertaken was almost entirely connected with the salt fish trade, in contrast to all the other establishments where Weil's disease has occurred, which specialize in the fresh fish trade.

Yearly and Monthly Distribution of Cases

The number of cases of Weil's disease which have occurred annually in Aberdeen during the past five years has been fairly constant. In 1934 there were twenty-four cases, in 1935 and 1936 seventeen cases, in 1937 twenty cases, and in 1938 twenty-six cases. It is clear that the advice we offered to the trade in 1934 in regard to preventive measures has never been utilized.

An analysis of the monthly distribution of cases in each of the five years suggests that Weil's disease occurs least often in February and March (a total of four cases in five years) and most often in August and September (thirty-one cases in five years). If the year is divided into two halves it is found that seventy-one cases occurred between July and January and thirty-three between February and June. Since the fish trade operates at approximately the same degree of activity all the year round it must be assumed that variations in the seasonal distribution of cases depend either on an increased or decreased viability of the leptospirae to seasonal variations of environmental temperature or on changes in the habits of the rats at different seasons of the year.

Age and Sex Incidence

Table I gives the age and sex incidence of 104 cases of Weil's disease occurring in the North-East of Scotland. There were fifty cases in males and fifty-four in females. The total number of males employed in the industry is 786 and the number of females 1,277. It will be noted that nearly half the cases occurred before the age of 20 and that four-fifths of these patients were females. This finding is related to the working conditions of the fish trade, in which young girls between the ages of 15 and 20 carry out the procedures of cleaning, gutting, and filleting fish. Between 80 and 90 per cent. of the workers below the age of 20 are females, whereas after the age of 30 the majority of the employees are males engaged as foremen, porters, carters, etc.

Table I.—*Age and Sex Incidence of Cases*

Age Group	Sex	Cases	Deaths
14–20	M	9	0
	F	40	0
21–30	M	18	1
	F	10	0
31–40	M	8	0
	F	3	0
41–50	M	7	1
	F	0	0
51+	M	8	4
	F	1	0
Total		104	6

Mortality Rates

Table II gives the death rate from Weil's disease in the 104 cases in the North-East of Scotland. The figure of 5.7 per cent. is a little over one-half of that obtaining in Holland. We ascribe the low death rate to the high incidence of healthy young girls in the trade. It will be noted that there were no deaths among the fifty-four females. The effect of advancing years in increasing the dangers of the disease is well brought out by the four deaths among the nine patients over 50 years of age. The same tendency is noted in regard to morbidity. In general, middle-aged and elderly patients were more seriously ill than young ones. The liver in such patients seems to be peculiarly susceptible to the toxaemia of Weil's disease, and if in addition there is a history of an alcoholic tendency the prognosis becomes correspondingly more serious. At least two of our fatal cases gave a history suggestive of having partaken of excessive spirits over a long period.

Table II.—*Analysis of Deaths*

	Cases	Deaths	Mortality per Cent.
Total	104	6	5.7
Male	50	6	12.0
Female	54	0	0.0
Under 50 years.. ..	95	2	2.1
Over 50 years	9	4	44.4

Clinical Manifestations

GENERAL

These will only be described briefly, as a full description of the symptoms and signs will be found in our previous publications.

The course of the disease may be divided into three stages. The first or febrile stage lasts approximately one week, and during this time septicaemia occurs, antibodies are not detectable in the blood, and spirochaetes are not found in the urine. The patient is suddenly taken ill and complains chiefly of headache, vomiting, and severe muscular pains all over the body. In severe cases there is marked prostration, and the temperature rapidly rises to 102–104° F. Table III gives the percentage incidence of the various symptoms and signs in the 104 cases. Since jaundice rarely appears before the fifth day of the illness a diagnosis of influenza is usually made. The

TABLE III.—*Percentage Incidence of Clinical Manifestations in 104 Cases*

Symptoms	Present in	Percentage
Sudden onset	104	100
Initial chill	71	68
Fever	103	99
Headache	91	87
Muscular pains	103	99
Prostration	46	44
Vomiting	84	80
Cough	18	17
Pharyngitis	34	32
Conjunctivitis	83	79
Icterus	68	65
Haemorrhages: mild	61	58
„ severe	19	18
Enlarged liver	28	26
Palpable spleen	1	0.9
Adenopathy	13	12
Meningitis	10	9

presence of a marked conjunctivitis (pink-eye) and the evidence of a toxic nephritis (albumin, cells, and casts) may be helpful in suggesting the correct diagnosis, particularly if the patient is employed in an occupation in which the hazard of leptospiral jaundice is high.

The second or toxic stage is characterized by the absence of spirochaetes and the development of antibodies in the blood and the excretion of organisms in the urine. If jaundice has not appeared by the beginning of the second week the case may be considered to be mild; the symptoms then rapidly abate. In moderately severe cases which are going to do well the fever abates and the clinical condition improves; but the jaundice continues for another week or two, and the signs of a toxic nephritis are present for at least a month. In cases doing badly the jaundice becomes intense, the urinary output falls, the blood urea rises rapidly, purpura into the skin and from the mucous membranes occurs, and a falling blood pressure and steadily mounting pulse indicate the gravity of the situation.

The third or convalescent stage is characterized by the development of antibodies in the blood and by the excretion of organisms in the urine. The distressing symptoms gradually subside, but convalescence is greatly prolonged in those who have been seriously ill. An interesting second rise in temperature occurs during the third week of the illness in approximately half the cases.

SPECIAL

(*a*) *Blood Examination.*—Red and white cell counts and haemoglobin estimations were carried out in a series of cases. The leucocyte count varied, according to the severity of the disease and the individual's response to the infection, from 10,000 to 30,000 leucocytes per c.mm. of blood. The increase was essentially due to an excess of neutrophil polymorphonuclear leucocytes, and a typical shift to the left was noted. The red cell count and haemoglobin were consistently reduced in all cases in which toxaemia was severe, and particularly if purpura was a prominent symptom. In such cases an erythrocyte count of 2,500,000 to 3,500,000 with a haemoglobin concentration of 40 to 60 per cent. was not uncommon. In one case with severe purpura the erythrocytes fell to 1,400,000 and the haemoglobin to 26 per cent., and a transfusion of blood had to be given.

(*b*) *Biochemical Estimations.*—The icteric index was estimated in eighty-three cases. In 80 per cent. a figure of 10 units or higher was found. Figures for the blood urea are available in eighty-two cases. In 60 per cent. a figure of 40 mg. per 100 c.cm. or over was found. Of the six fatal cases one patient died with anuria shortly after admission to hospital, and no figures are available for either the blood urea or the icteric index. Four died with the blood urea greatly increased—namely, 161, 250, 300, and 397 mg. per 100 c.cm. In the sixth case the blood urea was only 89 mg. per 100 c.cm., but this estimation was made on a sample of blood removed on the fourth day of the illness. The patient died at home on the eighth day after the onset, without being admitted to hospital. It is obvious, therefore, that a high blood urea is a sign of serious prognostic importance. Nevertheless it must be remembered that recovery can occur despite a greatly increased blood urea. Thus we have had seven patients recover whose blood urea was respectively 128, 128, 143, 152, 161, 202, and 300 mg. per 100 c.cm. With regard to the icteric index in the fatal cases, the figures were 60, 63, 67, 89, and 150. In contrast, in patients who have recovered we have obtained figures of 100, 166, and 187. In the six fatal cases death occurred between the eighth and tenth days of the illness, by which time the maximum degree of jaundice may not have developed.

(*c*) *Meningitis.*—In ten cases the symptoms and signs were strongly suggestive of meningitis. The clinical diagnosis was confirmed in each case by examination of the cerebrospinal fluid. The protein content was raised in most instances, but the figure varied between 25 and 80 mg. per 100 c.cm., the average being 54 mg. The number of cells per cubic millimetre of cerebrospinal fluid was also increased. It varied between 30 and 243, the average being 125. The increase in cells was proportionately greater than the increase in protein. Differential counts showed that in the early stages the increase in cells was due to an excess of neutrophil polymorphonuclear leucocytes. Later this was replaced by a lymphocytosis. The cerebrospinal fluid was tested for the presence of immune bodies, and in six cases a positive result was obtained. The titre at which the cerebrospinal fluid agglutinated the leptospirae was low in five cases—1 in 2 (three cases), 1 in 6 (one case), 1 in 30 (one case)—while in the sixth a figure of 1 in 300 was obtained. The cerebrospinal fluid was injected into guinea-pigs, but in no instance were leptospirae recovered. Although the ten patients with Weil's disease complicated by meningitis were severely ill, complete recovery occurred in each case.

Treatment

(*a*) *Symptomatic.*—Treatment on the general lines suitable for any severe febrile disease is required. This includes rest, good nursing, tepid sponging, and the use of diaphoretic, analgesic, and hypnotic drugs. A simple alkaline mixture containing potassium citrate, sodium bicarbonate, and liq. ammon. acetatis is worthy of trial for combating the gastritis and facilitating the urinary excretion. The diet should be low in fats and protein and rich in carbohydrate, since hepatic and renal damage is present. Plenty of fluids and fruit juice, sweetened with glucose, should be given frequently. Iron in full doses will be required to correct the hypochromic anaemia which so often develops.

(*b*) *Specific.*—Ample evidence has been accumulated in Holland and elsewhere in regard to the value of anti-leptospiral serum. A reduction both in the mortality of the disease and in the severity of the toxaemia has been shown to result, particularly if the serum is given early—that is, within the first four days. After the seventh day, when the septicaemic stage is over, the beneficial effects are much less marked. The amount of serum advocated is 10 to 20 c.cm., given intramuscularly or intravenously, the dose to be repeated in four to six hours as required.

Bacteriological Findings in Weil's Disease

The final diagnosis of Weil's disease is largely dependent on the recovery of leptospirae from the patient or on the demonstration of immune bodies in the serum when convalescence is being established. In this investigation culture of the blood for leptospirae has not been extensively employed. When specimens of clotted blood were sent for examination the serum was removed for serologic and biochemical examination, and the clot was then injected intraperitoneally into two young guinea-pigs. Table IV shows the results obtained when the first specimen of blood received from each of eighty patients was injected into guinea-pigs. Thus, up to the fourth day after the onset of illness the leptospira could be recovered from all cases. After that day the chance of recovering the organism rapidly decreased until on the seventh and eighth days it was found in the blood of exceptional cases only. These results are in accord with those reported by Japanese workers.

Table IV.—*Blood: Bacteriological Findings in 80 Cases (Presence of leptospirae as shown by guinea-pig inoculation)*

	Day of Disease										
	1	2	3	4	5	6	7	8	9	10	11+
No. +	0	2	3	11	3	8	1	1	0	0	0
No. —	0	0	0	0	6	15	14	10	1	1	4
% +	—	100	100	100	33	35	7	10	0	0	0

As regards the serological test, the findings are given in Table V. In no case was a positive serum reaction obtained before the third day after the onset. Thereafter the immune bodies rapidly increased in the serum until on the fifth day 50 per cent., and by the ninth day 100 per cent., of cases had given a positive reaction. Furthermore, the actual titre of the serum also increased from 1 in 10 in the early stages to 1 in 10,000 or 1 in 30,000 or more by the tenth day. In only three cases were leptospirae isolated from the blood at a time when immune bodies could be demonstrated simultaneously in the serum. In Case 37 the blood taken on the sixth day showed the presence of leptospirae and a positive serum reaction of 1 in 30; in Case 72 the specimen was collected on the fourth day and gave a positive result on guinea-pig inoculation and an agglutination reaction of 1 in 30; and finally in Case 81 the blood showed leptospirae on the seventh day and a weak serum reaction of 1 in 10.

Table V.—*Serological Tests on Serum*

	Day of Disease										
	1	2	3	4	5	6	7	8	9	10	11+
No. negative 1/10 dilution	—	2	3	9	5	9	3	2	0	1	0
No. positive 1/10 dilution or greater	—	—	—	1	5	16	19	23	8	11	62
% positive 1/10 dilution or greater	0	0	0	10	50	64	86	92	100	91	100
Positive reactions : Dilution of serum											
1/10	—	—	—	—	—	3	3	—	—	—	—
1/30	—	—	—	1	4	3	3	1	—	—	—
1/100	—	—	—	—	1	5	4	2	1	—	3
1/300	—	—	—	—	—	4	5	5	3	1	8
1/1,000	—	—	—	—	—	—	3	13	2	5	8
1/3,000	—	—	—	—	—	1	—	2	2	1	5
1/10,000 ..	—	—	—	—	—	—	—	—	—	3	12
1/30,000 ..	—	—	—	—	—	—	1	—	—	1	26

Again, in four cases—Nos. 15, 41, 54, and 87—the first examination of the blood carried out between the fifth and the eighth day of illness showed a negative guinea-pig inoculation test and a negative serum reaction. It is therefore necessary to keep in mind the possibility that bacteriological and serological investigations undertaken in suspected cases of Weil's disease within eight days of the onset may give negative results, and accordingly further specimens of blood may be required before the diagnosis can be finally settled.

The leptospira can also be recovered from the urine, but it is essential that the specimen must be inoculated into guinea-pigs as soon as possible after being passed. Two hundred and eleven specimens of urine from eighty-eight cases of proved Weil's disease were tested by this method. In no instance has it been possible to recover the leptospira from specimens collected within the first seven days of the disease. In the period eight to fourteen days after the onset 19.3 per cent. of samples were positive, in the period fifteen to twenty-one days 21.5 per cent., and in the period twenty-two to twenty-eight days 9.5 per cent. Thereafter the results were negative. It would appear, therefore, that at no time during the course of the illness can virulent leptospirae be recovered with certainty from the urine.

Agglutinins may also be demonstrated for *L. icterohaemorrhagiae* in the urine of patients convalescing from the disease. This is probably due to the fact that albuminuria is a constant feature of the disease, and the immune bodies are excreted in a dilute form attached to the euglobin. A series of 100 observations have been made in fifty-two proved cases of Weil's disease, and the results are recorded in Table VI. In the first week of the illness three out of eighteen (16.6 per cent.), in the second week twenty out of twenty-eight (71.4 per cent.), in the third week thirty-four out of thirty-seven (91.8 per cent.), and after the third week seventeen out of seventeen (100 per cent.) gave positive reactions in dilutions of 1 in 2 or greater. The highest urinary titre recorded during convalescence was 1 in 300.

Table VI.—*Serological Examination of Urine Specimens*

Dilution of Urine	Day of Illness			
	1–7	8–14	15–21	22+
Negative 1/2	15	8	3	—
Positive 1/2	2	5	11	—
„ 1/6	—	1	2	2
„ 1/10	1	4	7	5
„ 1/30	—	6	6	4
„ 1/100..	—	3	7	6
„ 1/300..	—	1	1	—
Total + ...	3	20	34	17
% + ...	16.6	71.4	91.8	100

Summary

The clinical manifestations of 104 cases of Weil's disease occurring between 1934 and 1939 are described.

In the paper are discussed some of the bacteriological and serological investigations carried out.

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THE ANTIRACHITIC VALUE OF HUMAN MILK

BY

J. C. DRUMMOND, D.Sc.

C. H. GRAY, B.Sc., M.B., B.S.

AND

N. E. G. RICHARDSON, B.Sc., M.B., B.S.*

(From the Biochemical Department, University College, London)

It is a surprising fact that the extensive literature on vitamin D does not contain precise information giving the range of antirachitic potency of human milk. It is a matter of particular importance when the character of the diet consumed by a large proportion of the people in this country is borne in mind. Our knowledge regarding the assimilation of bone-forming elements in the diet of mammalian species has been largely built up on the results of experiments on animals; these have taught us how great an importance is to be attached not only to vitamin D but to the total daily intakes of calcium and of phosphorus in one form or another, as well as the ratio (Ca/P) between these intakes. An admirable summary of the existing information regarding the significance of the level of intake of these mineral elements has recently been provided by Shohl (1938), but, broadly speaking, it can be said that, at any rate one level of Ca *or* P intake—assimilation—in the absence of supplementary factors such as members of the vitamin D group, is most satisfactory within a certain and rather narrow range of values for the Ca/P ratio. Moreover, at any one Ca/P ratio the assimilation tends to improve as the total intake of the two components rises. Finally, it should be noted that the administration of vitamin D at any level of intake or Ca/P ratio improves the deposition of bone mineral, but, in general, its influence is most pronounced when the former is low and when values of the ratio are outside the desirable range.

In days when fish-liver oils, antirachitic concentrates, and even the pure vitamins of the D group are so readily available, it is easy to forget that until the introduction in England in the late eighteenth century of cod-liver oil for the treatment of bone affections the ordinary person had no such means of protection against rickets. Accustomed as we are to-day to think in terms of doses of hundreds and thousands of international units of vitamin D, the amounts supplied by ordinary foods must strike us as curiously insignificant (milk 0.5 to 4, butter 20 to 100, egg yolk 150 to 500, liver 10 to 50 I.U. per 100 grammes) (Fixsen and Roscoe, 1937–8). What, then, was the position in England before the virtues of cod-liver oil were recognized? In a recent publication Drummond and Wilbraham (1939) examined this question in some detail, with the result, it is thought, that evidence has been obtained to show that the striking outburst of rickets which appears to have occurred in Southern England and Ireland towards the end of Tudor times, and which attracted great interest, was due primarily to a sharp fall in the consumption of dairy produce. It is there suggested that the outbreak of the disease was more related to a decreased intake of calcium in many diets than to a reduction in the amount of natural vitamin D, although doubtless both played a part.

Calcium Requirements

The remarkable facts revealed by the discovery of vitamin D and the investigation of its role have tended to direct attention rather unduly, so far as the study of human rickets is concerned, from the significance of the intake of bone-forming elements. The surveys of Sir John Orr (1936) and of others have given convincing proof how large a proportion of our population to-day are living on diets which fail to supply the estimated physiological requirement for calcium. These diets are in striking contrast to those of the relatively poor Englishman of centuries ago, when, thanks to wholemeal breads and large consumption of milk and cheese, the daily intake of calcium was often as much as four to six times that of the poor to-day. Seventeenth century diets of simple folk—for example, sailors or the patients of St. Bartholomew's Hospital—provided no less than 2 grammes of calcium a day, and, let it be noted, the Ca/P ratios were often excellent. It is not unreasonable to think that the human requirement for vitamin D would probably be at its minimum under such conditions. They are rarely found to-day. Hundreds of thousands of the poorer sections of the community are living at the present time on diets supplying from 0.2 to 0.5 gramme of calcium daily—intakes which are all too often associated with relatively high intakes of phosphorus, giving ratios of below 0.5 and not infrequently as low as 0.2.

Experiments have already clearly demonstrated the beneficial effect of supplementing diets of this character with additional calcium, thereby not only raising the total intake of bone-forming salts but also bringing the figure for the Ca/P ratio nearer the optimum range of 1 to 2. The improvement particularly affected the bony structures, and in this connexion it is important to remember that no additional vitamin D was supplied (Coward *et al.*, 1938; Gaunt *et al.*, 1938).

Factors leading to Rickets

The surprisingly small amount of vitamin D in cows' milk (17 to 26 I.U. per quart in summer and a mere 5 to 8 I.U. per quart in winter) and the discovery of the fact that the higher values in summer are due not to a change of diet but to the direct effect of exposure to sunshine and skyshine (Campion *et al.*, 1937) raised the very important question whether the smaller incidence of rickets among breast-fed infants, as compared with those reared on cows' milk, is to be ascribed to a more efficient utilization of the bone-forming salts, to a richer content of antirachitic vitamin in mothers' milk, or perhaps to both factors.

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* During the tenure of the William Gibson Research Scholarship of the Royal Society of Medicine.

The literature on the antirachitic value of human milk is unsatisfactory. Hess and Weinstock (1927) found that 25 to 30 ml. of human milk was required to prevent rickets developing in rats fed on a rachitogenic diet, whereas 20 to 25 ml. of cows' milk was effective. The results of this investigation, and of similar experiments subsequently reported by other workers, are misleading because striking improvements in the condition of the bones of animals fed on certain types of rachitogenic diets can be brought about merely by improving the Ca/P ratio. The apparent superiority of cows' milk as an antirachitic agent revealed by such experiments could be ascribed more correctly to its higher content of these elements than to any greater concentration of vitamin D.

In order to assay the vitamin D content of milks it is advisable to separate the fat and administer it to the animals fed on a rachitogenic diet. Few investigators have troubled to do this, and none, so far as we are aware, has attempted to make assays of the vitamin D content of human milk-fat by the modern method of evaluation against the approved international standard of vitamin D. The specimens examined by us were not entirely satisfactory in that they were for the most part random samples collected during the first two months of pregnancy from patients attending the infant welfare department of University College Hospital. Unfortunately, it was not practicable to obtain samples fully representative of the twenty-four-hours yield. On receipt of the specimens in the laboratory sufficient was retained for the calcium and phosphorus analyses (see later), the remainder being treated with alcohol and a mixture of ether and light petrol in order to separate the fat. The isolated fat was administered in carefully measured doses to groups of rats in which rickets had been produced by a rachitogenic diet. The degree of rickets at the beginning of the experiment and after ten days' dosage with the milk fats was assessed by *x*-ray examinations of the leg bones.

TABLE I.—*Analyses of Human Milks for Vitamin D, Calcium, and Phosphorus*

No.	Month of Test	% Fat	I.U. Vitamin D		Mg. % Ca		Mg. P %	
			Per gm. Fat	Per 100 ml. Milk	Total	Dialysable	Total	Dialysable
1	Jan.	4.0	1	4	25	—	10	—
2	Feb.	3.3	2.5	8	26	6	13	—
3	„	4.0	0.5	2	34	8	14	5.2
4	Mar.	3.75	2	7.5	35	11	15	6.4
5	„	4.0	2	8	37	18	15	8.8
6	Apr.	4.2	1	4	26	17	15	6.3
7	„	3.9	1	4	32	23	16	7.5
8	„	3.9	1	4	33	21	15	7.5
9	„	3.5	1.2	4	33	20	15	6.4
10	May	7.1	1.3	9	30	16	14	3.6
11	„	6.1	0.7	4	26	14	15	6.6
12	„	2.4	1.1	2.5	—	—	—	—
13	June	5.9	3	18	31	21	17	9.3
14	„	4.0	1	4	29	15	12	8.2
15	July	4.5	1	4.5	38	22	14	7.7
16	Sept.	3.0	2.7	8	—	—	—	—
17	Oct.	3.4	2.7	9	—	—	—	—
18	Nov.	5.5	0.7	5.5	26	23	18	6.0
19	„	3.8	1	4	36	—	17	—
20	„	4.1	1.8	7	34	22	13	11.0
21	Dec.	5.1	1.7	9	25	18.7	13	8.4
22	„	3.3	1.6	5	41	39	13	8.0
23	Jan.	4.5	1.5	6.5	28	22	10	7.0
24	„	4.0	1	4	—	—	—	—
25	„	4.2	1.2	5	—	—	—	—
26	Feb.	3.5	1	3.5	—	—	—	—
27	„	3.0	1.5	6.5	—	—	—	—

The milks were also analysed for total and dialysable calcium and phosphorus, the method for the phosphorus analyses being that of Kuttner and Lichtenstein (1930). For determining the dialysable Ca and P we used a suitable modification of the "static" dialysis method employed by Lampitt and his co-workers (1933, 1934, 1937). Usually about 120 ml. of milk, from which as much fat had been removed as possible by centrifugation, was dialysed against 3.3 ml. of water.

This provided about 2 ml. of dialysate suitable for analytical purposes. The results as a whole are set out in Table I. An attempt was made to ascertain whether any correlation could be traced between the results of the analyses of the individual milks and such information as was available regarding the nutritive state of the mother. Unfortunately it was not found possible to obtain precise details regarding the everyday diet of the women, but, by questioning, a certain amount of information was gathered which permitted a rough classification to be made, partly on the basis of the general character of the diet and partly on statements regarding the total income, number in the family, rent, etc.

Factors influencing the Vitamin D Content of Milk

An attempt has been made to correlate the results with various factors which are believed to influence the vitamin D content of cows' milk. In the first place, there is no evidence of a seasonal variation. The mean value of sixteen samples taken during the winter months (October to March, inclusive) is 5.9 I.U. per 100 ml., which compares well with that of 6.2 for the ten summer samples. This is a reasonable conclusion, for one would scarcely expect an effect from the influence of sunshine or skyshine to be noticeable in working-class women in London. The mean value of the whole twenty-six samples is 6 I.U. per 100 ml.

What seem to be significant differences appear when the results are classified according to estimates of the intakes of vitamin D by the women (Table II). The value of these results is open to question because, in the first place, the numbers in the groups are small, and, secondly, because we had not the information to provide an accurate estimate of the intake of vitamin D in the mothers' diet. With this reservation, however, we are inclined to believe that the results show that the vitamin D content of human milk is increased by raising the vitamin D content of the diet. Bunker, Harris, and Eustis (1933) have presented evidence that the administration to women of cows' milk artificially treated to increase its vitamin D value will raise the antirachitic value of their milk.

We are inclined to think—although again caution is necessary in view of the small number of samples analysed—that approximation between the mean antirachitic potency of the milk yielded by women on diets supplying in all probability between 100 to 250 I.U. of vitamin D daily and that of the milk from women dosed during the latter half of pregnancy with much larger amounts of vitamin D (approximately 1,000 I.U. daily) in the form of halibut-liver oil supplement indicates that 10 I.U. per 100 ml. of breast milk represents about the normal maximum value. Possibly the same evidence can be put forward to indicate that an intake of about 200 I.U. represents the *minimum* daily requirement of the nursing mother. Our results appear to show that the large doses of vitamin D given to some of the mothers over several months of pregnancy failed to bring about anything approaching a proportional increase in the vitamin D content of the milk. It may be, therefore, that there is an optimum concentration of this substance regulated by the mammary gland. It will be recalled that Gerstenberger, Hartman, and Smith (1927) failed to increase the antirachitic potency of breast milk by giving a teaspoonful of cod-liver oil (250 I.U.?) daily to a woman already receiving an adequate diet.

Our estimate of 200 I.U. of vitamin D as the *minimum* intake of the pregnant and lactating woman is in reasonable agreement with the daily intake of 300 I.U. recently recommended by the Committee of the Health Organization of the League of Nations.

TABLE II.—*Attempt to correlate Vitamin D Content of Diet and of Milk*

Estimated Vitamin D in Diet. I.U. Daily	Vitamin D Content of Milk Fat. I.U. per gramme	Vitamin D Content of Milk. I.U. per 100 ml.
Group A. Daily D intakes probably less than 100 I.U.		
35	1	4
50	1	4
50	1	4
70	1	4
70	0.5	4
85	0.5	2
Mean	0.8	3.7
Group B. Daily intake probably above 100 I.U.		
125	3	18
130	2.7	8
145	1.2	4
155	2.5	8
180	1.3	9
200	1	4
220	1.2	4
Mean	1.8	7.9
Group C. Women receiving vitamin D therapy (1,000 I.U. daily as halibut-liver oil) during latter half of pregnancy (figures in first column refer to diet only).		
36	0.7	5.5
60	1.8	7
90	2.7	9
90	1.7	9
190	1.0	4
200	1.5	6.5
Mean	1.5	6.9

Vitamin D Requirement for Bone Formation in Infants

It is necessary now to consider our results from the standpoint of bone formation in infants. There is, or, at all events, there has been until recently, no very clear idea how much vitamin D is required by an infant. For some time past it has been rather generally accepted that artificial feeding with cows' milk should be supplemented with vitamin D therapy. All sorts of doses have been recommended, but a considerable proportion of paediatricians have been in favour of daily doses of the order of 1,000 I.U. It now appears that in the majority of cases this is too much.

In a series of careful studies, in which cows' milk which had been artificially "fortified" in respect to vitamin D was used, Jeans and Stearns (1937, 1938a) were able to show that about 70 to 100 I.U. a day during the first three months will prevent the appearance of rachitic symptoms in the majority of full-term infants. This level of intake, provided by approximately 120 ml. per kg. of body weight of milk containing 12 I.U. per 100 ml., was not found adequate for premature babies, nor did it ensure optimum growth. Full protection was given when the intake of vitamin D was three to four times as great. The very large doses—for example, 1,000 to 5,000 I.U daily—which were so popular in the early days of enthusiasm for vitamin D therapy and which are still not infrequently employed, are probably unnecessary and actually appear sometimes to exert a definitely inhibitive action on growth (Jeans and Stearns, 1938b).

Influence of Calcium-Phosphorus Ratio

It is interesting that a satisfactory intake of cows' milk providing 12 I.U. of vitamin D per 100 ml. has been found to produce good calcification in normal full-term infants, because the amount of vitamin D taken by the young child would be of the same order as that provided by the milk of a well-nourished mother. This probability has to be considered together with the fact that the assimilation of the bone-forming elements is better (40 to 60 per cent.) when the child is fed on mother's milk than when cows' milk is used (20 to 30 per cent.). The reason for this better utilization has not yet been determined, but it may be important that the Ca/P ratio of human milk approximates to that of bone mineral, whereas the Ca/P ratio of cows' milk is considerably smaller.

	Ca (mg.%)	P (mg.%)	Ca/P Ratio.
Human milk	27–34 ..	13–17 ..	2.0
Cows' milk	100–160 ..	70–100 ..	1.5
Bone mineral (dahlite) $2Ca_3(PO_4)_2.CaCO_3$		.. ..	2.2

The relatively small concentration of calcium and phosphorus in human milk as compared with cows' milk raises several curious problems, of which the most important has been revealed by the careful studies of Leitch (1937). She has shown that the *total* intake of calcium when mother's milk is taken, much less the quantity actually *retained*, is often insufficient to provide the amount calculated as being requisite to maintain the composition of the body either at the maximum figure of 10 grammes of calcium per kilogram of body weight or at the smaller estimate of 8.13 grammes of calcium per kilogram (Hamilton, 1922).

Consideration of this extraordinary finding has led Dr. Leitch to consider the possibility that breast-fed infants must often exhibit not only imperfect calcification of new matrix but also osteoporotic changes in bones which at birth were relatively firm. It may be a fact that undetected rachitic changes are much more common in breast-fed infants than is suspected (Maddox, 1932), and it may also be true that if it were possible to make histological examinations we would be surprised at the frequency with which osteoporotic changes occur in the first half of lactation (Zarfl *et al.*, 1923). There seem to be only two explanations of the figures Dr. Leitch has produced. Either the newly born infant carries a reserve store of calcium sufficient to provide for adequate calcification during the months when the mother's milk does not provide enough —and it must be borne in mind that there is such a protective storage of iron—or the data of the metabolism experiments which Dr. Leitch has used for her analysis are misleading, perhaps because the milk was not of such a quality as to favour optimum calcium retention.

It remains uncertain in view of the evidence reviewed by Leitch whether changes in the dietary intake of calcium or phosphorus are reflected to any significant extent in the composition of a mother's milk. Our own results, admittedly scanty, suggest that such an effect is not detectable, at all events in the first two or three months of lactation. Some of the mothers we investigated had been receiving about 2 grammes of calcium lactate daily during the latter half of pregnancy, but this supplement to calcium-deficient diets did not appreciably influence the calcium content of their milks.

Conclusion

There is certainly need for more information, not only about the composition but also about the *yield* of milk from mothers whose diet, adequate in all other respects, provides at least 2 grammes of calcium, 1.5 grammes of phosphorus, and 300 I.U. of vitamin D daily. If such milk were made the subject of metabolic investigation on infants it is possible that some of the disturbing discrepancies would be dispelled.

Summary

The literature on vitamin D does not contain precise information as to the range of antirachitic potency of human milk.

The results of an analysis of human milks for vitamin D, calcium, and phosphorus are here recorded and an attempt made to correlate the vitamin D content of diet with that of the milk.

The conclusions derived from the analysis are given.

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THE PATHOLOGY OF CHLORIDE METABOLISM IN MAN*

BY

ALEXANDER LYALL, M.A., M.D., M.R.C.P.
Lecturer in Clinical Chemistry, University of Aberdeen

During the past ten years considerable significance has been attached to disturbances of the metabolism of chlorides in man. The information gained from observations on patients and experimental work in animals has applications in diseases so diverse as intestinal obstruction, pyloric stenosis, chronic nephritis, oedema, obesity, hypertension, and Addison's disease. The principles which control the chloride balance of the body and determine the nature of the processes of absorption, secretion, reabsorption, and excretion of chloride are of importance in these diseases, and their significance is already reasonably well established. The phenomena which control the exchange of chlorides in tissue cells and fluids are not yet fully explained.

Normal Cycle of Chloride Metabolism

The average normal adult on an ordinary diet ingests about 12 grammes of chloride daily. This can be easily verified by estimating the daily excretion of chloride in the urine. In addition to the urinary excretion, small quantities of chloride are excreted in the faeces and limited amounts in the skin secretions (probably not more than 2 grammes daily in the absence of active perspiration). In forced sweating the skin loss in chloride may amount to 10 or 12 grammes daily (McCance, 1938). It should be borne in mind that clinical analogies to such abnormal skin losses occur in conditions where there is intense sweating, in acute febrile disturbances, in the sweating of tuberculosis and acute rheumatism, in pneumonia, in thyrotoxic crises, and in heavy muscular exertion in hot surroundings.

Apart from external losses by these routes—skin, urine, and faeces—there occurs a continual circulation of chloride to and from the intestinal lumen. The total quantities of chloride in circulation in this way daily in the normal person are somewhat indefinite. Approximate measurements of volume and chloride content of the various alimentary secretions give some basis for calculation, as shown in Table I (McCance, 1936).

TABLE I.—*Intestinal Secretions : Chloride Content*

Secretion	Vol. (c.cm.) in 24 Hours	Authority	Chloride Content (grammes)
Saliva	1,500	Bidder and Schmidt	7.5
Gastric juice ..	2,000–3,000	Nicol and Lyall	17
Bile	300–500	Pfaff and Balch	4
Pancreatic juice	500–800	Wohlegemuth	8
Succus entericus	3,000	Pregl	18
Total chloride			54.5

These figures are quite approximate, and probably form a conservative estimate.

Nicol and Lyall (1939a and 1939b), for example, as shown in Table II, were able to remove 29 grammes NaCl by gastric aspiration from a male patient in the first day, and a total of 93 grammes in six days' aspiration, the amount on the first day representing the uninfluenced gastric secretion of chloride in this individual.

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* Read in opening a discussion in the Section of Physiology and Biochemistry at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

TABLE II.—*Gastric Secretion: Chloride Content*

Date	Gastric Aspiration (c.cm.)	Chloride Content %	Total Chloride (Grammes)
12/9/38	4,260	0.680	29
13/9/38	2,320	0.707	17
14/9/38	2,080	0.628	13
15/9/38	1,690	0.533	9
16/9/38	1,800	0.595	11
17/9/38	2,070	0.641	14

Total chloride secreted: 93 grammes; average, 15 grammes.

In a patient suffering from biliary fistula whom I have been able to investigate recently, the biliary flow showed an average volume of 1,000 c.cm., with chloride content of approximately 7 grammes daily, as shown in Table III.

TABLE III.—*Biliary Secretion: Chloride Content*

Date	Bile Vol. (c.cm.)	Chloride Content %	Total Chloride (Grammes)
24/4/39	780	0.70	5.5
25/4/39	540	0.73	4.0
26/4/39	480	0.69	3.3
27/4/39	720	0.73	5.3
28/4/39	1,200	0.73	8.9
29/4/39	930	0.70	6.5
1/5/39	1,080	0.72	7.8
2/5/39	1,380	0.66	9.2
3/5/39	1,020	0.70	8.5
4/5/39	1,320	0.70	9.3
6/5/39	1,320	0.69	9.2
8/5/39	1,200	0.70	8.5
Average	1,000	0.70	7.2

It would thus seem that about 50 to 60 grammes of sodium chloride is secreted into the alimentary canal in twenty-four hours, and the amount may be considerably greater in certain individuals. The actual rate of secretion is undoubtedly greater than 3 grammes hourly, and must take place relatively quickly during digestion and absorption of meals. This exchange would seem to make considerable demands on the available stores of chloride in the circulating blood and body fluids, an amount which different estimates place between 90 and 160 grammes for a man of 60 kilogrammes of body weight (Bartlett, Bingham, and Pederson, 1938).

We must assume that reabsorption occurs almost as rapidly as excretion, since no major reduction in the plasma chloride level was found by Dodds and Smith (1923) during gastric digestion. These workers found a fall of 10 to 15 mg. per 100 c.cm. in the plasma chloride during the first hour. In the second hour, while gastric secretion remained vigorous, the plasma chloride remained constant, and later showed a slight increase, to return to normal fasting level. The chloride secreted in the gastric contents is very rapidly reabsorbed by the intestine, and again forms part of the chloride store in the tissue fluids and blood plasma. The question of intestinal absorption of chloride is obviously rather a complicated physiological puzzle, since intestinal secretions contain up to 0.64 per cent. NaCl, while the chloride concentration of the intestinal contents for absorption is of the same order. The help of the physiologist is obviously required in the explanation of this anomaly.

Regulation of Chloride Content of Body Fluids

The regulation of the chloride content of the body fluids is dependent on the chloride content of the blood plasma. Most workers agree that this value remains between the limits of 580 and 620 mg. per 100 c.cm., values above 600 mg. per 100 c.cm. being found only occasionally. The chloride content of whole blood is considerably lower at about 440 mg. per 100 c.cm. on account of the low chloride value of the red blood cells. The exchange of chloride between blood plasma and body fluids forms one of the major means for stabilization of osmotic tension between those fluids. Table IV shows the average chloride content of the various body fluids.

TABLE IV.—*Chloride Content of Body Fluids*

Fluid	Chloride (as NaCl) mg. per 100 c.cm.
Blood plasma	600
Whole blood	438
Saliva	460
Gastric juice	670
Bile	700
Pancreatic juice	230
Jejunal juice	750
Ileal juice	400
Cerebrospinal fluid	730
Lymph	630
Milk	160
Sweat	350

The main controlling influences concerned in the maintenance of the chloride content of the blood plasma and body fluids are (*a*) the kidney itself and (*b*) adequate intake of chloride. Of these the former plays the major part, cessation of chloride excretion occurring as soon as the plasma chloride shows any tendency to diminution. So effective is this check against chloride loss that a minimal intake of chloride can be experienced for several days without any reduction of the plasma chloride level. The level of the plasma chloride at which renal excretion of chloride ceases is about 520 mg. per 100 c.cm. (Anderson and Lyall, 1937), as shown in two ways by Tables V and VI.

TABLE V.—*Case of Intestinal Obstruction: After Relief*

Time	Plasma Chloride mg. per 100 c.cm.	Urine Chloride mg. per 100 c.cm.
1 day	467	Nil
2 days	455	20
4 "	467	20
5 "	496	29
6 "	528	154
7 "	555	233
8 "	580	440

TABLE VI.—*Case of Gastric Aspiration*

Time	Plasma Chloride mg. per 100 c.cm.	Urine Chloride mg. per 100 c.cm.
1 day	606	310
2 days	599	204
3 "	526	20
4 "	467	21
5 "	410	10

This level of the renal threshold for NaCl is practically constant in health, although it may be altered in either direction in renal disease, with the kidney failing to pass chloride at levels above the usual renal threshold as in certain cases of renal disease with oedema, or allowing chloride to pass into the urine at values below 520 mg. per 100 c.cm. in some cases of intestinal obstruction and alkalosis with secondary toxic nephritis.

Requirements of Sodium Chloride

Although the average daily intake of sodium chloride is between 6 and 12 grammes, a large proportion of this amount is excreted daily. It seemed of importance, with regard to replacing the loss of chloride from the plasma and tissue fluids in hypochloraemia, to determine the actual basic requirements in chloride.

For this purpose healthy adults, during rest in bed, were placed upon a salt-poor diet and given additions of sodium chloride when chloride excretion had become constant. On mixed ward diets the chloride excretion in these patients averaged 9 grammes daily. On restriction of the diet to 2.1 grammes of chloride daily the chloride excretion fell within four days to an average of 2 grammes, and remained at this level for three days. Upon the addition of 2 grammes NaCl to the diet the chloride excretion increased by 2 grammes, and upon a further addition of 2 grammes NaCl the chloride excretion increased to an average of 7 grammes. The basal requirement of chloride for this period of deprivation is therefore in the neighbourhood of 2 grammes daily while standard conditions are maintained and perspiration avoided (Falconer and Lyall, 1937a).

Results of Chloride Deficiency

McCance (1936) and his co-workers have made us familiar with the effect of experimental chloride deficiency in the normal adult.

By means of repeated sweating by radiant-heat baths and replacement of fluid by liberal water intake, they succeeded in causing a fall in the plasma chloride to 0.468 mg. per 100 c.cm., an increase in the blood urea to 81 mg. per 100 c.cm., with a reduction of sodium and chlorine of the blood plasma, an increase in the alkaline reserve, and increase in blood proteins. The symptoms experienced were severe, and included anorexia and nausea, lack of appetite, mental apathy, muscular cramps, a general sense of exhaustion, inability to undertake effort, and breathlessness and fatigue on exertion.

The symptoms described by McCance correspond very closely to those found in patients suffering from pathological salt deficiency, of which the commonest cause is pyloric stenosis with repeated and copious vomiting. The patient is drowsy, disoriented, and may be obstructive or violent. He is intensely dehydrated. Table VII shows the blood changes in a typical case, with return to normal values on improvement.

TABLE VII—*Patient aged 66: Pyloric Stenosis*

Date	Blood Urea mg. per 100 c.cm.	Plasma Chloride mg. per 100 c.cm.	Plasma CO_2 vol. %	Plasma PO_4 mg. %
5/12/32	162	408	118	3.1
7/12/32	166	438	92	5.3
8/12/32	150	461	92	4.3
9/12/32	140	480	88	4.0
10/12/32	116	496	—	3.4
12/12/32	114	584	80	—
13/12/32	104	560	72	2.6
14/12/32	78			
17/12/32	64			
3/1/33	35			

In certain instances, if it is found that fluids and saline cannot be replaced efficiently by intravenous medication, it may be necessary to carry out jejunostomy for this purpose (Falconer and Lyall, 1938).

In general, intestinal obstruction at lower levels than the pylorus may result in hypochloraemia, azotaemia, alkalosis, and dehydration if the obstruction is in the upper part of the small intestine; or in azotaemia, dehydration with a variable disturbance of acid-base equilibrium, and no reduction in the plasma chloride (Falconer and Lyall, 1937b). Further variations are possible if fistula is included, as shown by Standard (1938). With duodenal fistula, dehydration and acidosis might actually be produced.

Gastric Chloride Secretion in Pathological States

Since the secretions of the gastric mucosa are reabsorbed normally in lower regions of the alimentary canal, the character of the gastric secretion in pathological states, and particularly during states of hypochloraemia, is of considerable importance in the preservation or restitution of the normal chloride content of the blood plasma and body fluids. Examination of samples of gastric contents taken at random from patients suffering from pyloric stenosis had suggested to us that the gastric mucosa could secrete a juice containing considerable quantities of chloride even when the plasma chloride level had fallen below normal. Suggestive-confirmatory evidence that such was the case appeared in several publications.

McCance (1938) found that there was little change in the hydrochloric acid or total chloride content of the gastric juice during experimentally produced salt deficiency in man. Soley, Lagen, and Lockhart (1938) observed no significant alteration in the free acidity or total hydrochloric acid of the gastric juice during experimental hypochloraemia in three healthy men. Katsch and Mellinghoff (1933) removed quantities of NaCl up to 33 grammes in cases of peptic ulcer, with an average resultant reduction of 51 mg. per 100 c.cm. in the plasma chloride and an average fall of 20 per cent. in the volume of the gastric secretions, but without any appreciable change in the chloride concentration. Nicol and Lyall (1939a) investigated a series of patients suffering from pyloric stenosis and vomiting with severe hypochloraemia. Continuous sampling of the gastric contents over twenty-four-hour periods showed that the daily curves of free HCl, total HCl, and total chloride showed practically no difference from similar samples taken after return of the blood chemistry to normal (Table VIII).

TABLE VIII.—*Average Values of Continuous Samples of Gastric Contents during Hypochlorqemia and Period of Recovery*

Case	Day	Plasma Chloride mg. per 100c.cm.	Gastric Chloride mg. per 100c.cm.	Free Acid	Urine Chloride mg. per 100c.cm.
1	1st	350	628	26	10
	3rd	496	667	30	10
	10th	525	610	26	214
	11th		(gastro-enterostomy)		
	14th	526	635	28	310
	17th	570	680	34	298

The reverse procedure seemed to be necessary to establish this phenomenon with certainty.

For this purpose Nicol and Lyall (1939b) subjected two patients with pyloric stenosis and gastric hypersecretion, but without changes in the blood chemistry, to a similar experimental procedure. The gastric juices were withdrawn continually for periods up to six days when the blood chemistry showed the changes of gross alkalosis and hypochloraemia. Under these circumstances the gastric secretions showed little qualitative alteration, but decreased in volume (Table IX).

This evidence probably does not add much to the clarification of the vexed problem of the regulation of the gastric secretions, but it certainly seems to be clear that

TABLE IX

Case	Day	Gastric Juices			Blood		
		Vol. c.cm.	Chloride	Total Chloride (grammes)	Chloride mg. per 100 c.cm.	Urea mg. per 100 c.cm.	CO_2 vol. %
1	1st	—	—	—	606	36	68
	2nd	4,260	0.707	30	599	40	84
	3rd	2,320	0.628	14.6	526	46	91
	4th	2,080	0.533	11	467	—	98
	5th	1,690	0.595	10	410	68	120
	6th	1,800	0.641	11.5	365	75	130
2	1st	—	—	—	540	28	55
	2nd	—	0.415	—	496	27	74
	3rd	2,560	0.450	11.5	—	26	84
	4th	3,020	0.420	12.7	468	36	96
	5th	2,110	0.452	9.5	345	43	95
	6th	1,010	0.397	4.0	336	54	102

the secretion of free HCl and chloride by the gastric mucosa is to a large extent independent of and uninfluenced by gross changes in the chloride content and alkaline reserve of the blood plasma. It is difficult to correlate these results with the findings of Apperly and Crabtree (1931) and Browne and Vineberg (1932), and it seems more probable that Gilman and Cowgill (1931, 1933) are nearer the truth when they suggest that the gastric mucosa shows a one-way permeability to chloride and that the chloride concentration of the gastric juice is such as to bring that secretion into osmotic equilibrium with the blood plasma.

Chloride Metabolism in Addison's Disease

During some of the observations already described on the chloride balance in cases of intestinal obstruction, the opportunity occurred to investigate two cases of Addison's disease.

In both the typical blood chemical changes found by Stewart and Rogoff (1925), Baumann and Kurland (1927), and others in adrenalectomized animals, and by Loeb (1933) and his associates in man, were present during the phases of Addisonian crises. One of these patients, however, had been under observation for several years, and although the presence of Addison's disease had been suspected the diagnosis could not be made with certainty until the recognized changes in the blood chemistry appeared. It was obvious that until this time no method was available by which the diagnosis of Addison's disease could be established with any degree of certainty in the early stages. Anderson and Lyall (1937) were struck by the great difference between the rate of urinary chloride excretion found in those cases, as shown in Table X, and in cases of intestinal obstruction with reduction of the plasma chloride levels.

TABLE X

Date	Plasma Chloride mg. per 100 c.cm.	Urine Chloride mg. per 100 c.cm.
28/2/37	534	390
29/2/37	531	360
1/3/37	511	290
5/3/37	496	700
6/3/37	488	880
7/3/37	496	470
8/3/37	479	310
	Injections of supracort	
9/3/37	452	270
11/3/37	438	200
12/3/37	502	210

It seemed to us that a method was available for the early diagnosis of Addison's disease from the ratio of the urinary chloride excretion to the plasma chloride level, and we stated that in the absence of evidence of diabetes or renal disease the finding of a chloride concentration in the urine of over, say, 200 mg. per 100 c.cm. when the plasma chloride level is below the minimal normal level of about 530 mg. per 100 c.cm. would strongly suggest the presence of Addison's disease.

Cutler, Power, and Wilder (1938) tested the validity of this suggestion by preliminary investigations on nine subjects with adrenal insufficiency and eight subjects without evidence of disease of the adrenal glands, and later by a standardized procedure in the examination of thirty-six additional subjects —eight with and twenty-eight without evidence of adrenal insufficiency. The test period consisted of three days on a diet containing 0.95 gramme of chloride ion, 0.59 gramme of sodium ion, and 4.1 grammes of potassium, with the addition of 0.033 gramme of potassium per kilogramme of body weight on the first and second days. Blood was drawn at 10 a.m. on the third day and urine collected from 8 a.m. to 12 noon on the third day. Determination of the sodium and chlorine content of the blood plasma and urine showed that "if the concentration of chloride in the specimen of urine on the third day exceeds 225 mg. per 100 c.cm., Addison's disease or adrenal insufficiency is strongly suggested; if it is less than 125 mg., adrenal insufficiency is made unlikely."

Confirmation of the findings of Cutler, Power, and Wilder have accumulated.

Dryerre (1939a) investigated four patients with Addison's disease, five suffering from asthenia not due to Addison's disease, and five normal controls. His results revealed that on the third day of the administration of a salt-poor high-potassium diet the concentration of the sodium in the urine is much higher in cases of adrenal insufficiency than in control subjects. Dryerre did not find the urinary chloride concentration in cases of Addison's disease to differ with such consistency from that of control cases. More recently Dryerre (1939b) has used diminution of the sodium concentration in the urine as an index of response to treatment by cortin and desoxycorticosterone in patients suffering from Addison's disease, and suggests that the method may be of value in standardizing the activity of preparations of cortical extract.

Within the past two years Anderson and I have been investigating patients with some of the signs or symptoms of Addison's disease—weakness, asthenia, pigmentation, hypertension, abdominal discomfort, loss of weight. Our technique differs from that of Cutler, Power, and Wilder, and is more simple.

The patient is given a low chloride diet for a period of five to six days. A shorter period may be necessary. The blood chemistry is investigated at the beginning and end of the period and the urinary chloride concentration compared with the plasma chloride level daily and at the end of the period. The normal ratio of plasma chloride to urinary chloride under these conditions is always greater than 3 to 1. In Addison's disease the urine chloride concentration approaches the blood chloride level, and where the ratio is below 2 to 1 a diagnosis of Addison's disease can be established with certainty.

Summary

This paper indicates the importance of disturbances of chloride metabolism in patients suffering from intestinal obstruction, pyloric stenosis, chronic nephritis, oedema, obesity, hypertension, and Addison's disease.

The exchanges of chloride in the alimentary canal are discussed, both normally and in pathological conditions.

Observations are made on the secretion of urinary chloride in hypochloraemic states, and the changes found in various types of hypochloraemia are illustrated.

It is pointed out that in Addison's disease the reduction in plasma chloride is associated with failure of the kidney to retain chloride.

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NOTES ON PSYCHIATRIC CASUALTIES OF THE FIRST DAYS OF WAR

BY

GEORGE PEGGE, M.A., M.R.C.S., L.R.C.P.

Experience of the first two weeks of war indicates that the special stresses of that period have already produced psychiatric cases and problems of special types not usually met with in peace-time psychiatric practice. Though it may be considered premature, it is felt that a record of impressions of such cases should be made while they are yet in mind, particularly as they belong to a phase of the war which is now passed—a period when the much-discussed mass bombardment of civil populations in this country was considered, and appeared to be imminent, before evacuation was completed and before war morale was established.

Occurrence and Attributability to War Strain

A casualty hospital situated close to a great railway terminus in London is so placed as to receive patients who collapse in special circumstances. The glass-domed station, the crowds, loud-speakers, and confusion of curtailed rail services, together with evacuation of children and mothers, punctuated by air-raid-warning sirens, brought the war home to many as a reality for the first time. War morale had not yet been established by leadership, and a sense of security had not been generated by knowledge of what preparations had been made for the protection of the civilian population. In most of the cases the patient had lost touch temporarily with his or her family.

A striking contrast existed between newly precipitated cases and old patients who came up as usual to the psychiatric out-patients' clinic. These old patients were all asked how the present situation affected their symptoms or themselves. Typical replies were: "I don't take no account of that." "I'm afraid this illness makes me rather selfish. I hardly think of the war." A small minority were troubled by fear of air raids, and it may be that others who failed to attend were those most affected.

The newly precipitated cases were brought in ambulances or by the police, having collapsed in the street or the station. On arrival they were still unconscious or confused. It was possible in all cases to restore consciousness and to obtain names and addresses, etc., in a very short time by reiterated reassurance and encouragement, continued until eyes opened and questions were answered. Typically, attention was apt to wander and irrevelant answers were given to questions. In one or two cases there was wild excitability, and this was usually controllable by quiet confident reassurance and persuasion. Only one true hysterical paralysis was seen. As the object of treatment was merely to enable patients to continue their journey out of London or to return them to their homes it has not been possible to follow subsequent developments in most of these cases. In one case a mother taking two children home from the seaside through London collapsed when she became cut off from them in the crowd. In this, as in other cases, there was a large element of fatigue, lack of sleep, and hunger. Alcohol played a part in a number of them, and there seemed to be an abnormal sensitivity to small quantities.

These cases were fairly equally distributed between the sexes. No children were included. They were of the less-educated classes. About twenty cases in all were seen, and the flow diminished markedly after the first week of war.

Cases simulating Acute Onset of Psychosis or of Severe Neurosis

Five cases fall into this class, and all but one were of the professional classes. There were three men and two women. They were doing responsible work and, except in one case, work directly connected with the state of emergency. There were other significant similarities. Four were intellectual types with a high sense of social responsibility; the state of stress had been established for a considerable time before the war broke out, and they had overworked, neglecting their own welfare for that of others, living on snacks and irregular meals and being unable to sleep adequately. In all the fear of a breakdown had been a factor for some time and had been compensated by increased press of activity, mental and physical. In all the onset was sudden and dramatic.

A man of 30 in a very responsible job calling for speed of decision and acuteness of judgment suddenly lost all energy, and after wandering aimlessly for an hour or so had a "black-out" of consciousness without collapsing. He was brought to hospital ten hours later with symptoms suggestive of paranoid schizophrenia.

A highly conscientious overworking governess of 28 had had sole charge of four small children in the country. She came up to London, losing some trunks on the way. The sight of sand-bagged buildings and the dark night streets seemed to alarm her unduly, and she suddenly said she must go out at once and find a job. She ran into the street and was eventually found in a police station. Two hours later, when seen at hospital, she was wildly frightened and suspicious, believing that a plan existed for her destruction in which the physician was a tool of the Government. She slept well with 15 grains of medinal, but next day was still more frightened and suspicious, and had to be placed in a mental hospital under an urgency order.

A medical man doing important organizing work on night duty had almost complete insomnia for a week and showed obsessional doubts and other obsessional symptoms.

A V.A.D. nurse who had served four and a half years without breakdown during the last war and who had attempted the same standards, disregarding twenty years' advance in her age, had suddenly what was probably a hysterical attack. There were, however, some persisting organic signs, which put the diagnosis in some doubt.

A young postman of 22, of good physique, was seen in a state of acute terror with loss of social sense and all morale, sweating, pallid, and with dilated pupils and crouching posture. He showed regressive tendencies, and passed water in public without recognizing that such an act was unusual. He was not amenable to reason or suggestion, though occasionally unexpectedly he would obey a suggestion. He became a little calmer on taking a sedative, but remained confused and frightened to an extreme degree. Subsequently he was admitted to another institution and failed to improve, regressing further in spite of convulsion therapy.

The severe and dramatic onset and typical symptomatology of this group of cases are in some instances markedly in contrast to the subsequent history. All were removed from the situation of stress and received various forms of treatment, the details of which are not available, but in which rest and sedatives certainly played a large part in most instances. The patient with obsessional symptoms recovered completely and is to return shortly to duty. One of the "paranoid schizophrenics" after three weeks is reported to be well and returning to duty. The other is as yet no better, but has been under care for less than a week. The case diagnosed as "simple terror" had developed more marked schizophrenic katatonic features. The outcome in the V.A.D. nurse is still in doubt, but recovery and return to duty appear probable.

Conclusions

Diagnosis and particularly prognosis in the second group of patients are particularly difficult. The typical features are the high sense of social responsibility adding to the stress of circumstances upon the patient before the onset of the breakdown, and the florid psychotic or neurotic symptoms at the time of breakdown. The outcome of these cases is not clear, but it is suggested that quick recovery is probable in a large proportion. They may easily be confused with true psychoses of acute precipitation. The possibility of relapse cannot as yet be ruled out. The simple cases in the first group are of more purely hysterical and anxiety types, though in the patients seen the hysterical symptoms were still plastic and amenable to suggestive modification. The probability of relapse would seem to be great. In most cases fatigue and neglect of proper meals have been large factors in the precipitation of the condition—factors that are easily removed if the patient can be got away from the situation of stress. Insomnia in some degree has been almost universal before the breakdown.

I have been engaged in diagnosis and disposal and have not had first-hand experience of subsequent treatment, but in view of the rapid recovery of some patients with simple rest away from stress it is to be hoped that the adoption of such methods as convulsion therapy will be delayed until the possibility of rapid spontaneous recovery has been ruled out. The fact that in the first week of war admissions to the observation wards of London County Council hospitals were much in excess of normal would tend to confirm the suggestion that many cases were wrongly diagnosed as psychoses, for it is well known that the great war and the war in Spain did not materially increase the incidence of insanity.

Summary

Two main types of psychiatric cases seen at a casualty hospital since the declaration of war are described:

The first type occurs in those of less strongly established sense of social responsibility and usually of less education. Both sexes are equally affected.

The second type occurs in highly intelligent, highly responsible people of both sexes.

The alarming, often psychotic, symptoms of the second group are not easy to distinguish from true psychoses. The diagnosis and prognosis can only be made after an initial period of treatment.

Cases in which the neurosis was established before the outbreak of war are, so far, in many instances quite unaffected by war stress.

DIABETES AND KIDNEY FAILURE

BY

K. E. BARLOW, M.R.C.S., L.R.C.P.

Medical Registrar, Coventry and Warwickshire Hospital

The following two cases of concomitant diabetes and nephrosclerosis are recorded in relation to some interesting questions of renal physiology.

Case I

On February 8, 1939, a man aged 56 was admitted to the medical wards of the Coventry and Warwickshire Hospital complaining of his right knee, which was painful and swollen. Three and a half months before admission the swelling had come on acutely in about three hours, and had persisted without remission. Radiographs showed punched-out areas on the external aspect of the right femoral condyle at the junction of the articular and external surfaces and in the part of the tibia which lies immediately adjacent. A radiological diagnosis of gout was suggested. Blood uric acid was estimated at 3.8 mg. per 100 c.cm.

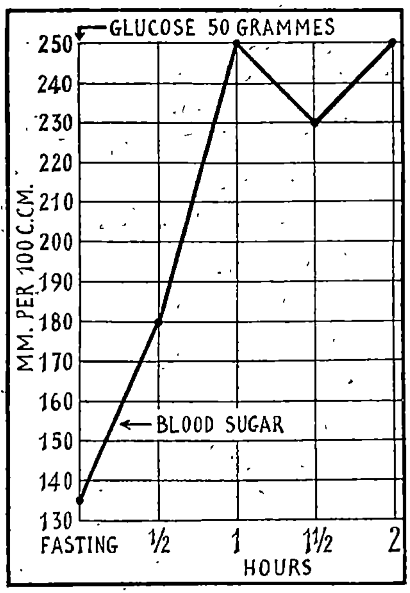

Chart 1.—Case I. The glucose-tolerance curve. Sugar was present in all specimens of urine.

Apart from the present trouble with his knee the patient had always considered himself a healthy man, although he said that he had had diabetes for about seven years. His urine turned Benedict's solution green. Investigation of the blood showed a diabetic sugar tolerance (Chart 1). As the patient looked pale, a blood count was made. Red blood cells were found to be 3,525,000, with haemoglobin 74 per cent. Free hydrochloric acid was present in the stomach, although reduced, and the icterus index was 6 units. This implied a haemopoiesis which was deficient but not characteristic of pernicious anaemia.

The routine examination of the urine revealed albumin. The blood pressure was 190/120. The retina showed haemorrhages but no exudates. The specific gravity of the urine passed on waking was consistently lower than that of specimens passed later in the day: the usual reading was of the order of 1012. A twenty-four-hour specimen of urine revealed a polyuria of 91 oz. Blood urea nitrogen was estimated at 28.9 mg. per 100 c.cm. Questioned about his condition before admission, the patient stated that he was accustomed to feeling thirsty but that "he fought against it." Usually he passed urine in the night, and he thought that the amount might be between one and two pints.

Commentary on Case I

The presence in the same patient of kidney damage and diabetes raises some interesting questions of renal physiology. The typical dysfunction of nephrosclerosis is failure of urinary concentration: a large volume of urine of low specific gravity is passed. Diabetes, on the other hand, tends to produce a large volume of urine of which the specific gravity in the uncontrolled disease is high, due to the sugar content. Typically the concentrating power of the kidneys is good in diabetes. What is the effect upon the mechanisms of sugar excretion in a diabetic of a kidney in which the powers of concentrating urine are damaged by nephrosclerosis?

Current views of renal physiology describe a glomerular filtration with later concentration by the tubules. Considered as a physical process, filtration implies the passage across the filter of a solution equivalent in concentration to that of the blood. If the glomerulus is a simple filter, the sugar level of the glomerular filtrate should rise and fall with the level of the sugar in the blood. This appears to be Cushny's view. The assumption follows that the renal threshold is to be looked for in the functions of reabsorption and concentration (which are attributed to the tubules), since refusal to filter and the ability to concentrate are not the properties of an ordinary physical filter. In diabetes it is to be assumed that water and threshold substances are withdrawn from the glomerular filtrate and returned to the blood, leaving the post-tubular urine concentrated and of correspondingly higher specific gravity.

From this argument it follows that where the kidney function of concentration is damaged the sugar leakage should be increased. If the glomerular filtrate contained a sugar concentration equivalent to that of the blood, and if the renal threshold depended upon the function of concentration of urine, damage to this function should lower the renal threshold to sugar and increase the degree of glycosuria.

The case above recorded offers a critical experiment upon this point. The glucose-tolerance test shows that a lowering of the renal threshold does in fact result from the kidney damage. Glycosuria occurs at a blood-sugar level of 146 mg. per 100 c.cm., although at the end of two hours the blood sugar remains high (224 mg.). The conclusion is that dysfunction in urinary concentration does lower the renal threshold to sugar. This fact is of importance in the interpretation of glycosuria in diabetics suffering from kidney damage. In such patients sugar in the urine may correspond to blood-sugar levels of much lower and more normal character than is usual in diabetes.

If this be accepted, however, a further question arises. 140 mg. of blood sugar per 100 c.cm. is a level within the limits of what may result from a large carbohydrate breakfast. This being so, why is it that nephrosclerotics do not commonly produce a glycosuria as a sort of "renal leak" induced by dysfunction of urinary concentration? It appears that some factor other than failure of concentration and reabsorption must be at work in diabetics to produce a glycosuria from low blood-sugar levels, since this does not occur in uncomplicated nephrosclerosis.

Case II

In attempting to confirm these views a second case was investigated. A woman aged 67 was admitted on February 26, 1939, complaining of breathlessness, pain in the chest, swelling of the ankles, and retching. The oedema of the ankles had been present twelve months, but was getting worse. Breathlessness dated back fourteen days. Blood pressure on admission was 160/95. This rose to 200/110 after three weeks, when the oedema had cleared. A previous diastolic reading of 120 mm. Hg had been recorded some months previously. A history of polyuria was elicited; the patient stated that she was accustomed to pass water about three times during the night, and she estimated the quantity at three pints. The urine contained albumin. At the time of admission extensive oedema was present. Blood urea nitrogen was estimated at 51.8 mg. per 100 c.cm.

These findings suggested a case of nephrosclerosis passing into uraemia. The need for the immediate use of diuretics vitiated measurements of twenty-four-hour urinary volumes and of specific gravity. The history of polyuria, however, is evidence of long-standing failure of renal concentration, particularly as albumin had been present in the urine six months previously.

The patient stated that she had suffered from diabetes for fifteen years. Her urine turned Benedict's solution green. The blood-sugar curve is shown in Chart 2.

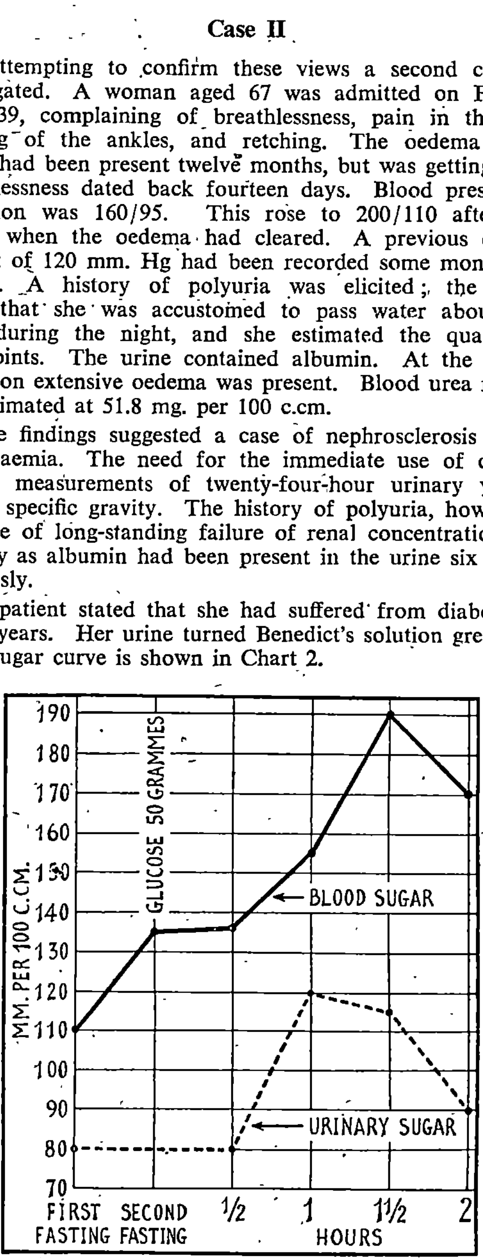

CHART 2.—Case II. The glucose-tolerance curve, showing blood-sugar and urine-sugar levels. Ketones were present in the first four specimens of urine.

Commentary on Case II

The effect of the kidney damage upon sugar excretion is shown by the glucose-tolerance curve. Here to verify results an extra blood-sugar estimation was carried out an hour before the tolerance test, and the bladder was then emptied by catheter. This investigation showed that from a fasting blood-sugar level of 111 mg. per 100 c.cm. the patient was passing 85 mg. per 100 c.cm. of sugar in the urine. The renal threshold therefore was below 110 mg. One hour after 50 grammes of glucose had been ingested the blood sugar had risen to 154 mg., and urine obtained half an hour after this specimen showed 120 mg. per 100 c.cm. The blood-sugar level rose to 184 mg. in one and a half hours, and remained at 168 mg. at the two-hourly interval.

These results show that the renal threshold to sugar had been lowered by the kidney damage to a level suggestive of a "renal leak." That this is not the explanation is evidenced (1) by the diabetic lag which gives a blood-sugar level of 184 mg. per 100 c.cm. in one and a half hours and 168 mg. at the end of two hours; (2) by the presence of ketosis in the urinary specimens, revealing a deviation of fat metabolism.

This case therefore confirms that where diabetes and nephrosclerosis coexist the urinary findings in respect of sugar represent a different physiological state from that which obtains in ordinary cases of diabetes uncomplicated by nephritis. In uncomplicated diabetes the same degree of glycosuria represents a profounder disturbance of the *milieu* of the tissue cells than obtains in cases complicated by nephritis. The logical conclusion is *that, so far as the diabetes is concerned,* the mild diabetic is better off with nephritis than without it. Whether this supposition is borne out in experience time and observation will reveal.

The evidence of this investigation has obvious bearings on insulin therapy. In uncomplicated diabetes, glycosuria may be taken as evidence of a raised blood-sugar level which may require to be lowered by insulin. In the nephritic, glycosuria has not the same significance. It is likely to be present in cases in which the blood sugar is not raised to a degree likely to be toxic to cell function, and if insulin were to be pushed in these cases, under the guidance of urinary glucose, it seems probable that dangerous and even destructive hypoglycaemia might be induced.

Summary

Two cases are recorded in which diabetes and nephrosclerosis coexisted.

A theory is offered that may explain the fact that the diabetic with nephritis often does surprisingly well.

The conclusion is drawn that the mild diabetic is better off with nephritis than without it.

I wish to express my thanks to Dr. A. J. Wilson for permission to report his cases and to Dr. Wright for the assistance of his department in the sugar estimations.

Evaluation of Disinfectants.—It is proposed in two papers by different authors (whose results do not agree) that disinfectants intended for clinical use should be submitted to tests of toxicity for mammalian tissue as well as tests of capacity for killing bacteria. The method employed by Bronfenbrenner *et al.* is to determine the diminution in oxygen uptake by both a bacterium and a suspension of mouse liver caused by exposure to various concentrations of the disinfectant. Salle and his colleagues, on the other hand, employ the older method of comparing a phenol coefficient obtained in the ordinary way with the results of exposing tissue cultures to the action of the disinfectant.—Evaluation of Germicides by Manometric Method. J. Bronfenbrenner and J. Doubly. Evaluation of Group of Germicides by Tissue Culture Technique. A. J. Salle, W. A. McOmie, I. L. Shechmeister, and D. C. Foord.—*J. Bact.* June, 1939, **37**, 583, 639.

Clinical Memoranda

Simultaneous Colles's Fracture and Backward Dislocation of the Elbow

The following case would seem to be of interest in view of its rarity. Usually when a fall on the outstretched hand results in a Colles fracture, this happening absorbs much of the force of impact. Further, the victim "crumples up," thus preventing any continuation of rigidity at the elbow-joint which is necessary to allow transmission of force to the lower end of the humerus as a fulcrum for dislocation.

Case Report

A healthy undergraduate aged 21 was running down the stone steps of an underground lavatory on May 20, 1939, about 10.30 p.m., when he slipped and fell heavily on his outstretched left hand. He walked back to his college in great pain at the wrist-joint and elbow-joint, and with a useless left arm. After first aid had been rendered he was taken to the Evelyn Nursing Home.

On examination the left wrist showed the classical "dinner-fork" deformity, and a Colles fracture was evident; the left elbow showed considerable deformity, the olecranon projecting backwards, and the ordinary signs of dislocation. A general anaesthetic (evipan and chloroform and ether) was given, and reduction was effected by manual traction and manipulation at each joint, starting with the elbow. The wrist was put up in a non-padded "castex" cast, after the pattern of Böhler. "Castex" has a celluloid instead of a plaster-of-Paris basis, and is extraordinarily light, therefore encouraging function. The elbow was bandaged over plenty of wool and placed in a sling. One-quarter grain of morphine was ordered. The *x*-ray report by Dr. E. V. Bevan next day (May 21) stated that the position of the fragments at the wrist was perfect, and that there was a tiny fragment torn off the coronoid process of the ulna. The usual considerable swelling developed (arm, one and three-quarter inches; forearm, two inches).

After-treatment.—It was impossible to get the patient to carry out the modern (wrist) treatment of immediate full use of the hand and fingers because of the tremendous bruising and swelling involving the origins of the forearm muscles. Any attempt to use the fingers during the first week or two caused great pain and inhibition. Progress in function of the wrist was therefore slowed up very greatly. Conversely, this relative stagnation of activity and circulation in the forearm muscles undoubtedly held up the absorption of the extravasation from the neighbourhood of the elbow-joint, as it tended to track distally. Radiant heat and massage were given, and *active* movements encouraged at the elbow-joint.

On *June 13* all swelling had disappeared, but movement at the elbow was very restricted—flexion to just over 90 degrees and extension limited by about 40 per cent. The "castex" was removed from the wrist, and strapping with elastoplast, reinforced by split-tailed "paragon" plaster, was substituted. The movements were good, but not full, and slight swelling was present.

On *June 19* flexion of the elbow had improved to about 90 per cent. normal, but extension was still restricted by 30 degrees. The strapping was removed from the wrist, which was still a little "puffy"; the movement was not quite full.

Commentary

This state of things at the end of a month contrasts forcibly with the usual *full* function and *normal* appearance of the ordinary Colles fracture attained by Böhler's methods. It is in still greater contrast with the normal progress of a dislocated elbow unhampered by a broken wrist and allowed the effect of forearm function. I recorded a case in the *Journal* (1935, **1**, 15) of a

Cambridge scrum-half who played rugger and gained his "blue" in this important key position of accurate passing nineteen days after backward dislocation of the elbow uncomplicated by other injuries.

Apart from the coincidence of the double injury, therefore, it would appear that each lesion delays the recovery of the other, and that restoration of full function of either joint is considerably postponed thereby.

Cambridge. R. Salisbury Woods, M.D., F.R.C.S.

Bell's Palsy treated by Incision of Sheath of Facial Nerve

The following case may be considered of sufficient interest to warrant publication.

Case Record

A boy aged 13 was referred to me early in November, 1938, on account of a Bell's palsy of two weeks' duration following a cold. There had been intermittent slight otalgia on the affected side. Upon examination it was found that left-sided facial paralysis was complete. There was very slight hyperaemia of the tympanic membrane with slight mastoid tenderness. The patient, who was and remained afebrile, was treated for two weeks by conventional local and general therapeutic means. As there was no evidence of improvement in the paralysis, and as the existence of Wallerian degeneration was proved by the absence of response to faradic stimulation, the nerve was exposed in the Fallopian aqueduct by means of small chisels and bone curettes from the mastoid foramen to its forward bend beneath the lateral semicircular canal. The sheath, which appeared normal, was slit up with the point of a Graefe cataract knife for the same distance. The manner in which the ostensibly hyperaemic nerve protruded through the slit sheath offered immediate and striking proof of the compression to which the inflamed nerve was being subjected.

The wound healed by primary union. The patient left hospital on December 6, at which time faradic response was still absent, though the tone of the facial muscles seemed to have improved. When next seen on February 8, 1939, the facial paralysis had quite recovered and the hearing was normal.

The late A. B. Duel, in two special lectures delivered at the Royal College of Surgeons on October 10 and 11, 1934, stated that from 15 to 20 per cent. of cases of Bell's palsy underwent a violent toxic infection with a severe inflammatory reaction (a compression within the Fallopian aqueduct) which renders the axons useless; in a day or two faradic response disappears. In such cases the regeneration is never complete, the amount of recovery bearing a definite relation, as in the cases of accidental or traumatic origin, to the severity of the initial lesion.

Arguing on the success which attended his experiments on rhesus monkeys in which the nerve was exposed and injured, Duel and his co-worker, the late Sir Charles Ballance, maintained that the cases of Bell's palsy which make but a partial recovery ought to have the nerve in the Fallopian aqueduct uncovered early and be decompressed by incision of the sheath *at that stage.* He further maintains that careful attention to the electrical responses will allow of differentiation between the simple potentially recoverable cases and those which are violent and in which partial or complete paralysis will persist. Duel and Ballance corroborated their theoretical and experimental work by the brilliant results they obtained in practice, in one case of palsy of ten years' duration.

The operation was done in the case described above because clinically it belonged to the smaller percentage of "violent" cases.

Cork. J. B. Horgan, M.B., D.L.O.

Reviews

IMPAIRED FERTILITY

Sterility and Impaired Fertility: Pathogenesis, Diagnosis, and Treatment. By Cedric Lane-Roberts, M.S., F.R.C.S., F.R.C.O.G.; Albert Sharman, M.D., M.R.C.O.G.; Kenneth Walker, F.R.C.S.; B. P. Wiesner, D.Sc., Ph.D., F.R.S.Ed. With a Foreword by Lord Horder, G.C.V.O., M.D., F.R.C.P. (Pp. 419; 87 figures; 3 plates. 14s. net.) London: Hamish Hamilton. 1939.

Sterility and its treatment has in the past received scant attention in most gynaecological textbooks, and the inquiring reader has had a difficult task to obtain a comprehensive view of modern work on this subject. This new publication by eminent workers in this country supplies a real need. A much larger field is covered than is indicated by the title, for almost every aspect of reproductive physiology in the human species is discussed. A considerable amount of space (116 pages) is devoted to the methods of examining seminal fluid, and, as is to be expected, Dr. Wiesner's methods for distinguishing spermatozoal abnormalities are described at length. Special attention has also been given to the technique of testing for tubal patency, and there is a full discussion with numerous illustrations of the newer methods of salpingography. The technique of endometrial biopsy is excellently described, and many less usual topics, such as testicular puncture and artificial semination, receive full attention.

In compiling a book on such a large subject it is perhaps inevitable that there should be a certain amount of overlapping between the sections. This is most noticeable with regard to endocrinology, and particularly so with regard to the gonadotrophic hormones. The authors have adopted various combinations of letters to express the nature of the hormone preparations for clinical use: thus extract of the anterior lobe of the pituitary gland is designated "ALP." This title has an awkward resemblance to "APL," which has hitherto been commonly used by American writers to describe an entirely different preparation. In spite of recent official recommendation the adjective "gonadotropic" is used in preference to "gonadotrophic"; and it seems that the respectable compound word "non-ovulation" must give way to the doubtful hybrid "anovulation." The sections on hormone treatment are somewhat discursive, and are written in an enthusiastic rather than a critical manner; better results are implied than the authors' own figures seem to justify. Statements without statistical backing such as "the administration of chorionic hormone is, as a rule, successful in preventing abortion" are not helpful. Appendices are added in which biological tests are described, and technical details concerning the preparation of certain gland extracts are enumerated. The book is lavishly illustrated and the reproductions are of a high order. We can confidently recommend this publication as an up-to-date exposition of modern work on human reproductive physiology and particularly of the problems connected with impaired fertility in the male and female.

ARTERIAL EMBOLISM IN THE LIMBS

Les Occlusions Artérielles Aiguës des Membres: Formes Cliniques, Indications Physiopathologiques et Thérapeutiques. By H. Haimovici. (Pp. 124; 26 fr.) Paris: Masson et Cie. 1939.

This book follows the author's monograph on arterial embolism in the limbs which we reviewed last year. Unlike that work, which dealt largely with the experimental and pathological aspects of peripheral vascular occlusion, the present volume is not illustrated, and is more concerned with the clinical and therapeutic features. It also covers a wider field inasmuch as arterial obliteration by causes such as injury and inflammatory lesions is considered as well as that due to embolism. Professors René Leriche and J. Fiolle wrote a preface to the former volume, Professor Fiolle introduces this one. It worthily maintains the high standard of the former work and does credit to the Faculty of Medicine of Marseilles, which, along with the Strasbourg School headed by Leriche, is achieving a reputation for its contributions to our knowledge of occlusive vascular disease.

This book consists of six chapters, the first dealing with physiopathological considerations, the second with the syndrome of acute arterial occlusion, while the remainder consider in turn clinical features, diagnosis, prognosis, and treatment. Difficulties in distinguishing between arterial occlusion the result of embolism and that due to thrombosis are considered in detail. When the result of embolectomy is doubtful or when for technical reasons this operation is not feasible, Haimovici advocates arteriectomy, but treatment by drugs, vascular exercises, injection of the sympathetic ganglia, and the indications for amputation are also considered. The six chapters are divided into conveniently arranged and well-headed sections and follow a short general introduction in which the scope of the work is indicated. References are scarce and neither listed nor given in detail; there is no bibliography and historical aspects are not considered. The absence of illustrations has already been commented upon, but these are defects in an otherwise excellent account of the subject. Clinicians generally and surgeons in particular should be familiar with this work dealing with a subject which we in this country have perhaps tended to neglect.

IMMUNOLOGY

Immunity: Principles and Application in Medicine and Public Health. By Hans Zinsser, M.D., John F. Enders, Ph.D., and Le Roy Fothergill, M.D. Fifth edition of *Resistance to Infectious Diseases.* (Pp. 801. 28s. net.) London: Macmillan Company. 1939.

The last twenty years have seen a great increase in the application of immunological knowledge to medicine and public health. At the same time the work with synthetic antigens, largely initiated by Landsteiner, and the quantitative work of Heidelberger have made antigen–antibody reactions much more comprehensive. In order to aid the practitioner to understand more fully methods used in practice in the light of the new theoretical knowledge, and to stimulate laboratory workers by examples of the practical application of their work, Professor Zinsser, with the co-operation of Drs. Enders and Fothergill, has re-written *Resistance to Infectious Diseases* under a new title. It is now divided into two sections—"Principles and Theory" and "Special Immunological Problems of Individual Infections."

The second section contains thorough discussions of, for example, immunization against diphtheria, the serum treatment of pneumonia, and the immunological aspects of virus diseases and of scarlet fever and streptococcal infections. The first section is unequal. There is a full treatment of hypersensitiveness, the practical significance of which appears particularly in the chapter on tuberculosis. There is a very good account of iso-antibodies and blood groups. The treatment of the relation of the specificity of antigens to chemical structure is clear and thorough; but the treatment of precipitation and agglutination reactions seems inadequate. There is little about the antigenic structure of bacteria; little also about the permanent effect of one immunization as shown by the prompt appearance of large amounts of antibody in the serum on a later injection of antigen. It is also regrettable that a book of this type should perpetuate the error of speaking of the two fractions into which serum proteins are separated by dilutions of serum with distilled water as the globulin and albumin fractions. The index is more than usually annoying; thus, if the reader looks up "Arthus phenomenon" he is referred to hypersensitiveness, and then has to look through a column of references to hypersensitiveness before arriving at "Arthus phenomenon."

THE TISSUES OF THE BODY

The Tissues of the Body: An Introduction to the Study of Anatomy. By W. E. Le Gros Clark, F.R.S. (Pp. 372; 109 figures. 15s. net.) London: Oxford University Press. 1939.

This work by Professor Le Gros Clark is the type of book which for a long time has been desired by teachers of anatomy. It embodies a large amount of information which has been acquired during the last ten or fifteen years and has not yet been adequately recorded in general textbooks. This material has been put together in a succinct form, accompanied by valuable comments and references to the articles in which the subjects were originally described. Beginning with a brief reference to the anatomy of the cell and early development of the human embryo, there follows a description of the connective tissues, including cartilage and bone, in which allusions are made to the recently described cartilaginous canals in the epiphyses of long bones and the vascularization of articular cartilage. This is succeeded by a chapter on the structure and growth of bone, illustrated by coloured photographs of madder-fed pigs, and diagrams showing the manner in which bone is remodelled by the combination of growth processes with an absorption mechanism which preserves the contour of the bone. A review is also given of the biochemical factors involved in the deposit and absorption of lime salts, the effects of certain enzymes circulating in the blood, and the evidence afforded by *x*-ray films of permanent condensations in long bones, which mark the original site of the epiphyseal lines during temporary arrests of growth, these condensations having occurred during childhood as a result of illnesses of a febrile nature. The chapter on blood vessels is especially noteworthy; it includes a summary of the important work on the growth and innervation of blood vessels by Clark and Clark, who have perfected a means of direct observation of the growth of capillaries and circulation of the blood in a transparent chamber inserted into the ear of a rabbit. Two camera lucida drawings of these are reproduced: one shows two separate *non-anastomosing* lymphatic and blood vessel plexuses within the same field; the other records of the growth of a lymphatic capillary towards an extravasation of blood and the subsequent picking up of red corpuscles by the newly formed lymphatic sprouts and wandering cells.

Later the author reviews the observations and deductions of Boeke, Head, Stopford, Waterston, and Woollard on the innervation of the skin, and he then discusses the cerebrospinal and sympathetic nervous systems partly from the historical standpoint, partly from the experimental, physiological, and morphological aspects. The latter group includes references to chromatolysis, cell atrophy, retrograde cell degeneration, allusions to the older methods of Wallerian and Marchi degeneration, and observations on the degeneration of "terminal boutons" and nerve endings. Finally there is a review of recent work on the vascular supply of the central nervous system, comprising observations on the relative vascularity of different parts of the brain; the intracranial circulation; the effects on the circulation of nervous activity; the disposition and closeness of the capillary plexuses, their relation to the nerve cells and particularly to cell collections in the hypothalamus.

With reference to the subtitle of this work we may confidently state that it will be read with interest and profit by many besides those students of anatomy to whom the author offers it as an introduction.

SURGERY AND RHEUMATIC DISEASES

Der Rheumatismus. Chirurgie und Rheumatische Krankheiten. By Dozent Dr. A. Fonio. (Pp. 235; 26 figures.) Dresden and Leipzig: Theodor Steinkopff. 1939.

In this small volume Dr. A. Fonio of Berne summarizes our knowledge of rheumatism and the so-called rheumatic diseases. An account of the clinical manifestations presented by acute and chronic rheumatism in different parts of the body, their differential diagnosis, and the hypotheses that have been advanced to account for the so-called rheumatic diseases comprise the bulk of the work. Some idea of its scope may be gathered from the fact that there is a special section on haemophiliac joints, and that such conditions as tenovaginitis stenosans, von Bechterew's spondylitis, and the different varieties of osteochondritis are dealt with in detail, while reference is also made to such affections as Morton's metatarsalgia and prepatellar bursitis. The difficult problem of the relation of tuberculosis to rheumatism is discussed in some detail. There are twenty-six illustrations, mostly of radiographs showing the osseous changes in such conditions as Kienboch's disease and Calvé-Legg-Perthes osteochondritis.

The illustrations break up pages of well-printed text, which is clearly set out under appropriate headings. A list of the source of references from which the text has been compiled is given and occupies three pages, but a more complete bibliography to an otherwise very fully discussed subject might be advisable in a second edition. Author and subject indexes are provided. This is altogether an admirable work which is worthy of translation into English.

Notes on Books

The third edition of Dr. DOUGLAS KERR's well-known textbook, *Forensic Medicine*, has been enlarged to include consideration of the effects of several Acts of Parliament, notably the Matrimonial Causes Act, 1937, and the Infanticide Act, 1938. He has rewritten the section on professional secrecy at the beginning of the book with relation to pregnancy, confinement, abortion, attempted suicide, venereal disease, crime, and other matters: his attitude is substantially that professional secrecy should be maintained except in extreme cases where the public interest demands a disclosure. Considering that the book is largely intended for students, it would be improved by an amplification of the sections dealing with civil aspects of the subject, or medical jurisprudence proper—for example, testamentary capacity, business relationships, negligence, consent, and the liability of hospitals. The inclusion of the subjects of criminal and civil negligence in the chapter on wounds still seems incongruous with all respect to the author's justification of their inclusion there for teaching purposes. The book remains an admirably clear and useful presentation of a wide subject for those who are not immediately concerned with it. It is published at 15s. by A. and C. Black.

The Language of the Dream by Dr. EMIL A. GUTHEIL is published at 15s. by the Macmillan Company. It contains a wealth of examples of dreams, the interpretation of which illustrates the personality of the dreamer especially in relation to neurosis. The author is a disciple of Steckel and claims that it is possible to build up a "language of dreams," since the symbolization employed in dreams is essentially restricted. He believes that much of the free association of patients in relation to dreams enjoined by Freud is a waste of time and indeed in many cases misleading. He claims that the method of "active analysis" in which the analyst does the interpretation is time-saving and successful. In so doing he does not use a rigid interpretation of symbols, but, knowing that the possible meanings of symbols are few, he is able from knowledge of other factors relating to the patient and by comparison with other dreams to pick out the real meaning for the particular patient without much difficulty. He considers that other schools of psychopathology have recently neglected the dream and that in any case their approach is one-sided. The author certainly makes out a case for his slogan of "back to the dream" and shows how it often illustrates both the life plan of the patient and his principal difficulties and resistances. The book is readable and logical in its arrangement and will certainly stimulate thought among all those interested in psychopathology and psychotherapy.

Preparations and Appliances

A NEW TYPE OF COMBINED OBSTETRIC COUCH AND DELIVERY TABLE

Professor CHASSAR MOIR, M.D., F.R.C.S.Ed., F.R.C.O.G., writes from the Nuffield Department of Obstetrics and Gynaecology, University of Oxford:

An obstetric couch should combine three distinct features. It should be a bed of reasonable size and comfort; it should be instantly convertible to an operating table for the lithotomy position, and it should have an easy means of lowering the head end for treating a shocked patient. In this country an additional problem of design is presented by the fact that it is customary to conduct normal deliveries with the patient in the left lateral position; a bed of unusual breadth is therefore generally required; but, as will be seen, this difficulty can be overcome by a simple alternative arrangement which avoids the necessity of pulling the patient into a cross-bed position.

The details of a new type of combined bed and operating table and its method of use are clearly shown in the accompanying pictures. The bed is absolutely rigid and has no tendency to slide on the floor. The head rail can be removed for convenience to the anaesthetist. The height is convenient both for normal delivery and for forceps application with the patient in the lithotomy position. When the lower portion is pushed in much less room is taken up than with an ordinary bed, and the new couch is therefore specially useful where space is restricted. Lastly, while this bed is not designed as an operating table for laparotomies, it can, in point of fact, be put to this purpose. On several occasions circumstances have made it necessary to use the couch for performing Caesarean section, and although it is unnecessarily broad for the purpose (3 feet) no undue difficulty is experienced by an operator of average height. For abdominal operations the slight Trendelenburg tilt can be used to great advantage. Before starting the operation, however, it is advisable to place a small support, such as a builder's brick, under each of the two lower legs; the degree of tilt available is then considerably increased.

This bed has been developed in the Nuffield Department of Obstetrics and Gynaecology and has been in use in the maternity wards of the Radcliffe Infirmary, Oxford, for nearly a year. It has proved to be a great boon to both the medical and nursing staffs, and in particular it has been welcomed by the labour-ward sisters because of the help it gives in conducting delivery in the left lateral position. As will be seen, certain features found in other obstetric beds have been borrowed and combined with new ideas. My thanks are due to Mr. Carnac Rivett for allowing me to copy his pattern of leg support for left lateral deliveries. I am greatly indebted to the generous help of Mr. H. R. Hoskins, who has been responsible for putting the design into practical form. The bed is made by Messrs. Hoskins and Sewell, Ltd., Midland Works, Bordesley, Birmingham. I have no financial interest in its manufacture or sale.

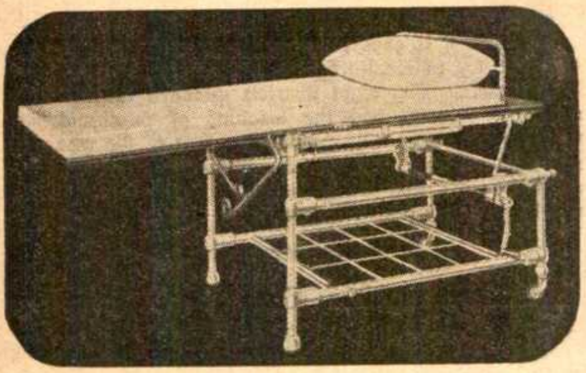

Fig. 1.

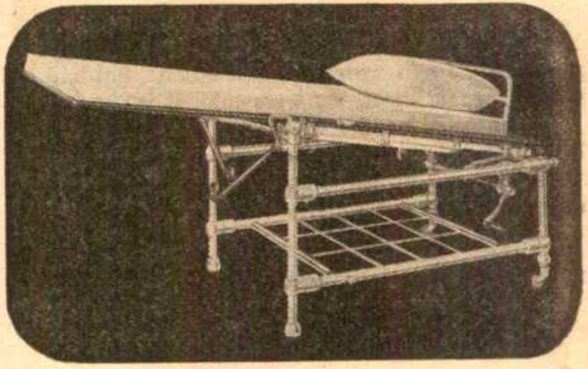

Fig. 2.

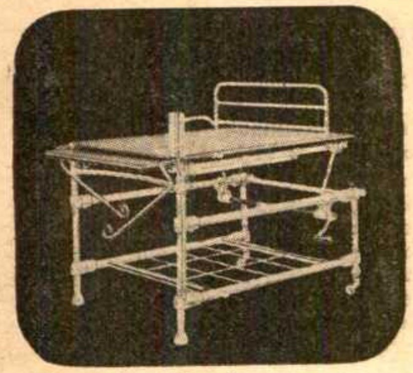

Fig. 3.

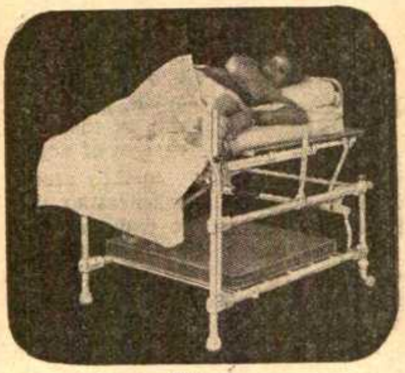

Fig. 4.

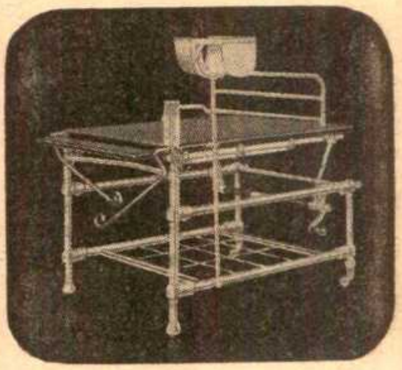

Fig. 5.

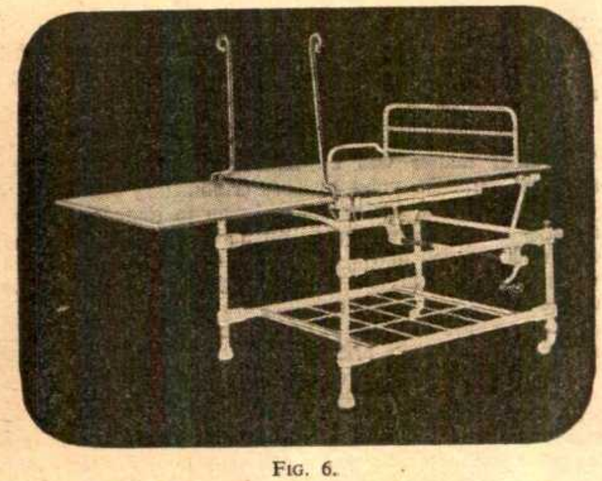

Fig. 6.

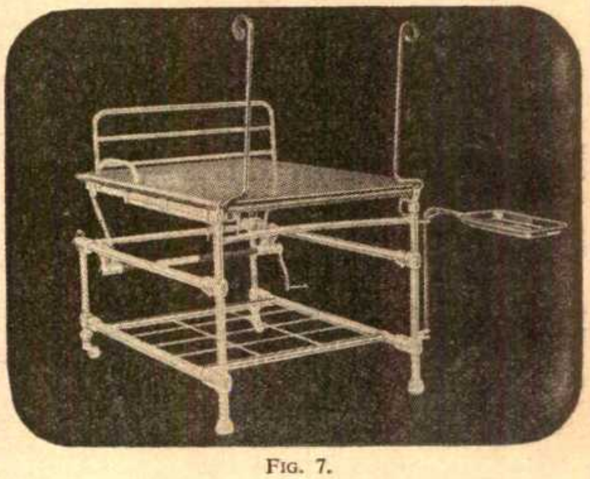

Fig. 7.

Fig. 1.—Normal position of bed. The castors on the legs at the head end allow the bed to be easily moved when the labour room has to be cleaned. The head-rail can be detached for convenience if an anaesthetic is to be administered.

Fig. 2.—By turning the handle the bed can easily be put in the head-down position for treating shock.

Fig. 3.—For left lateral delivery a foot support is dropped into slots and the lower section of bed is pushed into a convenient position. (See also Fig. 4.) Note the pillow-retaining rail at right side of bed.

Fig. 4.—Position for left lateral delivery. Note that the lower section of the rubber mattress is now accommodated on a shelf below the bed.

Fig. 5.—During the actual delivery the patient's upper leg is supported on a cradle.

Fig. 6.—The preparation for lithotomy position can be made by a nurse single-handed. The lower section of the rubber mattress is removed as before. The supports for the legs (which are permanently attached to the bed) are swung round into the upright position, and the patient's legs are raised and secured in the usual manner.

Fig. 7.—Finally, the lower section of the bed is pushed in. The obstetric couch has now become an operating table. There is ample room for a bucket to be placed below the bed, and there is no obstructing metal work to be soiled with blood, etc. The small instrument tray may be attached to the side of the bed, on which can be arranged the instruments necessary for perineal repair. Even when dealing with a heavy patient all manœuvres can be performed by one nurse.

MATERNITY HOSPITALS IN "EVACUATED" LONDON

The maternity hospitals of London are working under more than ordinary difficulty. The position was complicated in the first instance by the proposed evacuation of expectant mothers, then by the refusal of many of the women to be evacuated, and finally by the return to London of a number of women who had gone to the reception areas. Such returns have taken place so frequently that the new word "de-evacuation" has had to be coined. In some cases, we were told, it is the husbands who have insisted on the wives' return owing to dissatisfaction with country midwifery and other arrangements, but this must not be taken as a reflection on the services in reception areas generally.

Queen Charlotte's

On inquiry at Queen Charlotte's Maternity Hospital, the largest in the country, we were informed that it was carrying on as usual in the old buildings in Marylebone Road, except that it has only sixty beds in place of the usual eighty. At the new Queen Charlotte's at Hammersmith the laboratories have been temporarily closed, the Medical Research Council having withdrawn the leading workers for duty elsewhere, and the isolation building has been taken over by the borough council for other purposes. The new buildings, one of them approaching completion, cannot be used at the present time. Two special difficulties were mentioned at Queen Charlotte's, and no doubt they apply elsewhere. One of them is financial, due to the reduced earnings of the husbands of patients. The other arises from the fact that practically all the honorary staff had volunteered for national service, and on the outbreak of war took up duty in the outer hospitals of the sectors. With regard to teaching, it is the earnest desire of Queen Charlotte's that medical students and pupil-midwives should present themselves at the school as and when the teaching staff return. Such classes at the hospital as are now held are full to overflowing, some other hospitals in London having suspended their teaching facilities. The clinics are being maintained, and the domiciliary service is as nearly as possible on normal lines. The motor-cycles used by the forty midwives, on which they carry all their equipment, do eighty miles to the gallon, so that petrol restriction is not likely to affect this branch of the hospital service. The district covered by Queen Charlotte's is a very wide one, extending over the west of London and "half way up the Great West Road." One unhappy result of the closing down at Hammersmith is that the human milk bureau has had to go out of action temporarily. This was a service of national importance, and the hospital is now hard put to it to supply human milk for desperately ill babies.

Other Institutions

Another of the great maternity institutions, the City of London Maternity Hospital, which ordinarily has eighty-one beds available, is carrying on with sixty-seven in the City Road, but it is also supplying a maternity unit for a reception district in Hertfordshire, and has a branch hospital at Hatfield at present occupied by twenty-five patients. The City of London Maternity Hospital is also admitting private patients and is carrying on with its district work in the city area. Both at the City Road and in Hertfordshire pupil-midwives are being taught and post-certificate instructions given, as well as a course for nurses in analgesia. It was mentioned at the City Road that owing to the fact that the hospital is taking emergency cases which would ordinarily have gone to St. Bartholomew's or the London Hospital, as many as twelve Caesarean sections were done during the first three weeks of September.

The General Lying-in Hospital in York Road, Lambeth, which is the third of the great midwifery teaching hospitals, is closed except for office administration and for the domiciliary service, which is being carried out as usual—indeed to a greater extent than usual—in the neighbouring boroughs of Camberwell and Walworth. The closing of the hospital is due to its situation, which was considered not suitable for war-time hospital planning, but it has been entrusted with the care of lying-in and expectant London mothers in three districts in Hertfordshire—though not mothers from the particular district in London in which it is accustomed to work. These districts are St. Albans, Radlett, and Ware, where houses have been taken for the purpose, and teaching is fully carried on. At the Mothers' Hospital (Salvation Army) at Clapton, which has one hundred beds, fifty are at present occupied, and it is expected that the other fifty will be used as the Ministry of Health desires the hospital to admit gynaecological cases. The eight districts attached to this hospital are also very busy, and the teaching of pupil-midwives is proceeding as usual. The outstanding fact of the whole situation is that a larger number of women are being confined in their own homes, and the midwives on district duty will have a very busy and responsible time.

THE MEDICAL DEFENCE UNION

Another year of useful service to the medical profession was reported at the annual meeting of the Medical Defence Union which took place at 49, Bedford Square, W.C. The membership of the Union now stands at over 22,000, and the funds available at £130,850. On the question of the position of practitioners on national and military service, the annual report points out that many medical men during war will be brought into closer professional association with members of the public, and that they should therefore maintain their membership of the Union to secure continuity of protection should charges of negligence or the like be brought against them.

In their usual summary of the cases submitted to them the solicitors to the Union (Messrs. Hempsons) draw attention to two cases of special interest. In one of these a patient, badly hurt in a motor accident but not unconscious, was attended by a general practitioner and approved his calling in a surgeon. Before the treatment could be given, however, the surgeon's retainer was somewhat abruptly determined in favour of another surgeon, and liability was repudiated on the ground that in calling in the first surgeon the practitioner had acted on his own initiative and without authority. In the county court it was word against word, and the judge accepted the patient's denial and dismissed the claim. It appears that a general practitioner has no implied authority to pledge the patient's credit to the extent of consultant's fees save in very exceptional circumstances.

The Missing Swab

The other matter was a "missing swab" case, and the Union has gained a point towards establishing the view that a surgeon is not liable for the omission to remove all swabs that have been inserted during an abdominal operation provided he is satisfied that a reasonable system of checking and counting swabs is in use at the hospital or nursing home, that the nurses and others assisting are fully qualified, and he has been assured that all swabs are accounted for. In this case in which a swab had been left in a special jury gave a verdict against the surgeon, but the Union appealed to the Court of Appeal, who overruled the jury's findings and ordered a new trial, of which order, however, the plaintiffs have not taken advantage. It cannot be said, of course, that this is a verdict in favour of the surgeon; it is tantamount to "not proven," but the solicitors say that there are two very important matters inherent in the decision. In the first place it makes it clear that the case of James *v.* Dunlop (1931) is not an authority for the principle that the surgeon is *ipso facto* liable for a miscount, but that all that case decided was that on the particular facts there was negligence. Secondly, the decision means that the principle of *res ipsa loquitur* (that the facts speak for themselves) has no application to a case of this kind. It was held by the majority of the Court of Appeal that in such a matter it was the duty of the plaintiff alleging negligence to prove it, and that it would not be safe to beg the question of proof by suggesting that certain things could not happen without negligence.

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PROGNOSIS IN TOXAEMIAS OF PREGNANCY

In the not very distant past it was commonly supposed that women who survived eclampsia and its immediate risks made a quick recovery and could later undergo further pregnancy without fear of renewed danger. There is now abundant evidence to show that this view is incorrect; a considerable proportion of these women are permanently crippled in health, and there is a ten to twenty times greater liability to a recurrence of the eclampsia in subsequent pregnancy. The exact nature of the residual disease has been the subject of much discussion, but it has been generally assumed to be a chronic nephritis, occult or revealed, resulting from glomerular damage. In a recent paper read before the British Congress of Obstetrics and Gynaecology Professor F. J. Browne and Miss G. H. Dodds[1] presented results of a comprehensive study of the after-histories of 400 patients who had been under treatment for pregnancy toxaemia in University College Hospital since the inception of the obstetrical unit twelve years ago. Most of these patients had been repeatedly examined over a period of many years. This valuable paper throws much light on the question of prognosis, and while certain previous beliefs are confirmed others are clearly disproved.

The chief facts brought to light by the analysis are the findings that continued hypertension was present in a large proportion of the patients in the eclamptic and pre-eclamptic groups, and that chronic nephritis of the type characterized by albuminuria, high blood urea, or impaired kidney tests was not present in any case. This latter observation in particular is at variance with current teaching, although several recent writers have prepared us for this view. Thus, Theobald in 1933 stated that the Registrar-General's returns did not show any significant difference in the death rate from Bright's disease between married and unmarried women, or even between women and men. In considering this question it must be remembered that chronic cardiovascular change is intimately bound up with the function and pathology of the kidney, and it may therefore be fair to say that current teaching is more at fault with regard to its definition of nephritis than to its basic meaning. Be that as it may, it is safe to say that chronic glomerulo-nephritis can no longer be regarded as a sequel of toxaemia of pregnancy.

Hypertension (defined as a blood pressure in excess of 130/75) was present in 60 per cent. of eclamptic and in 50 per cent. of pre-eclamptic patients. There is therefore no support for the prevalent belief that eclampsia carries a less dangerous remote prognosis than does a continued pre-eclamptic toxaemia. To some it may seem that the standard for defining hypertension is set too high. If, however, a modified standard of 140/90 is used, 30 per cent. of patients in the eclamptic group still register an excessive blood pressure. Browne and Dodds believe that in these patients there is a familial tendency to hypertension, and that pregnancy merely hastens its onset. It would be interesting to know the incidence of hypertension in a comparable group of healthy non-parous women of similar ages drawn from a same area; possibly such an analysis will later be forthcoming. Another important observation is the fact that albuminuria may linger after pre-eclamptic toxaemia for twelve or even fourteen months before it permanently disappears. In spite of this the kidney behaviour as revealed by functional tests is apparently normal. This delayed healing has in the past been mistaken for evidence of glomerulo-nephritis; the necessity for a prolonged observation is thus emphasized.

Patients showing recurrent toxaemia in succeeding pregnancies were in most cases found to have hypertension continuing between the pregnancies. Sixty-five patients known to have hypertension before pregnancy, or at least before the twentieth week of pregnancy, and in whom no other sign or symptom of disease could be detected, were followed through a total of eighty-five pregnancies. In this group 9.2 per cent. died within the twelve months under review. In spite of this high death rate it is stated that pregnancy does not appear to have an obviously detrimental effect, and the high death rate is to be explained by the assumption that the expectation of life in this group is already very poor. True chronic nephritis of the glomerular type complicating pregnancy was found in only seventeen women. It is interesting to know that nine of these patients passed through pregnancy without any obvious aggravation of the original chronic nephritis. On the other hand, five patients in this group died in the period under review; the opinion generally held regarding the gravity of this condition is thus confirmed. A blood urea level of over 40 mg. per cent., the presence of albuminuric retinitis, or increasing albumin in the urine are danger signals which urgently call for termination of pregnancy.

This investigation illustrates the value of clinical observation patiently continued over a long period of years. It is doubtful whether such work would be possible except in a special department staffed by whole-time, or substantially whole-time, workers. At a time when university policy regarding the establishment of "clinical units" is being subjected in certain quarters to adverse critcism, this publication comes as a striking example of the valuable research which is now being fostered by the system. We look forward with interest to further contributions regarding pathological and biochemical studies which have been made concurrently with the present clinical investigation of pregnancy toxaemia.

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[1] *J. Obstet. Gynaec. Brit. Emp.*, June, 1939.

SOCIAL HYGIENE IN WAR TIME

The British Social Hygiene Council, which was originally known as the National Council for Combating Venereal Diseases, came into existence twenty-five years ago as a result of what we may presently cease to call the "great war." Naturally, therefore, it has felt an increased sense of responsibility in view of emergency conditions, the increase in the armed forces, and the feeling of general insecurity, all of which bring their own psychological dangers. During the war of 1914–18 it is estimated that about 400,000 men of the British forces were treated for venereal disease, which meant their withdrawal from military service for an average of five or six weeks, while the damaging effect on the civilian population and the children was apparent during later years. The incidence of venereal diseases among the civil population is thought to be lower now than it was in 1914, though there are no figures available for the earlier year because no free treatment centres had then been established, and it would not be relevant to take the immediate post-war period, when conditions were quite abnormal. The twenty-fourth annual report of the council (published in the latter part of July) calls attention to the number of militiamen under training, the doubling of the strength of the Territorial Army, the recall of a number of Army reservists, and the expansion of personnel in the Navy and Air Force. During the present year, before the crisis had ripened into war, 700,000 young men were or had been in camp and depot, with their necessary removal for shorter or longer periods from normal conditions of employment and family life.

The council holds that it is essential that education on the place of sex in life and guidance in sex behaviour should be given to all young men while under discipline. Medical instruction on the dangers of venereal disease is provided by the military authorities, but some more positive preventive measures are considered necessary. The incidence of both syphilis and gonorrhoea in the defence forces fell steadily in recent years. In 1921 in the Army the admissions to hospital for all forms of venereal disease were 74 per 1,000 strength; in 1931 this figure had fallen to 32, and in 1936 to 27.3. In the Navy there has been a fall from 113 per 1,000 strength in 1921 to 69 in 1931 and 57 in 1936; while the Air Force showed an admission rate of 36 per 1,000 in 1921, which had fallen to 14 in 1931 and 9 in 1936. Nevertheless there are a definite number of new cases, and the question which arises is where the women and girls who were the partners of these infected men obtain treatment, if they obtain it at all. A perplexing element in the situation is the discrepancy between the number of men and of women who have sought treatment for gonorrhoea at the centres—nearly four men to one woman—which suggests, after allowing for other factors accounting for sex difference, that there are probably a large number of women in the community suffering from gonorrhoea in various stages without ever seeking treatment. In centres such as Edinburgh, where an adequate social service is attached to the treatment centre, and where close co-ordination exists between the various medical services of the municipality, the numbers of men and of women are almost equal. From a questionary issued to medical officers in charge of 186 treatment centres in England and Wales a year ago it appeared that there were only three whole-time and twelve part-time venereal diseases almoners. In one county (Staffordshire) a detailed inquiry was undertaken. In the two county borough centres the cases of recent infection for gonorrhoea numbered 267 males and 100 females, and only 125 contacts had been brought under medical care at the centres, the untraced contacts numbering 242. Neither centre had a trained almoner or social service worker. In another group of ninety-four county patients, partners or wives were traced in only twelve cases, leaving eighty-two untraced contacts. An obvious stumbling-block in the way of the almoner making inquiries as to contacts is the risk which he or she runs of an action under the law of libel, and in a conference with naval authorities at one of the major ports it was found that this was a real deterrent to such social service in connexion with the centres. It is felt that communications between medical men and their official representatives, the almoners, should be regarded as privileged, but it will need either an amendment of the law or a test case before that can be established.

The revival of D.O.R.A. has also concerned the council, which is anxious to prevent a renewal of the difficulties that developed during the last war through the introduction of powers under that Act which were at variance with both public opinion and the voluntary treatment scheme. A suggestion has been forwarded to the Government with regard to the kind of section which might be embodied in emergency regulations without arousing the controversy which followed the introduction of 40 D in the original D.O.R.A. This concerns persons who are in an infectious condition, refuse treatment, and expose others to risk; and who it is felt should be placed under suitable control with facilities for treatment on modern lines.

SALUTE TO HARVEY CUSHING

The death last Saturday of Harvey Cushing removes a great surgeon and humanist. For many years British surgery has acknowledged his fertilizing mind and pen, and there are few if any surgical clinics concerned with operations on the brain that have not been inspired by his pioneer work. In America he is rightly looked upon as one of the greatest figures that the United States has produced in medicine—the man who created a new field of surgery and established a school whose ideals and methods have influenced surgeons everywhere. Harvey Cushing had pupils and admirers throughout the civilized world: universities, colleges, and learned societies delighted to honour him. In no country was he held in higher regard and esteem than in Great Britain, where every neurological clinic recognized him as the leader of intracranial surgery. His influence and achievements are part of the history of modern medicine. It was well said of him six months ago: "Harvey Cushing has flown higher and sustained his flight more consistently than any of his medical contemporaries.". With regard to his pioneer studies of pituitary tumours we read: "He held the key to endocrinology. . . . The story of the pituitary is not yet complete, but the work of Harvey Cushing has accelerated progress in one of those inspired bursts of speed that characterize great epochs in the history of disease."

RESIGNATION OF SIR FREDERICK MENZIES

Widespread regret will be felt at the announcement that Sir Frederick Menzies has resigned his position as medical officer of health and school medical officer to the London County Council. The regret will be accentuated by the fact that the retirement has come about at his own request, a year earlier than it would have fallen due under the age limit, owing to the virtual disappearance for the duration of the war of the L.C.C. public health department and the hospital services as a unit organization. In seeing his work dispersed and his plans for the future indefinitely postponed Sir Frederick Menzies shares the distressing experience of many others who have to do with public health and hospitals at the present time. The exigencies of the war have uprooted in a day what it took many careful years to plan. But the London County Council service had been built up to an efficiency which made it a pattern to the whole country, and indeed to public health work everywhere. Sir Frederick Menzies has had a very full career in the public service. It would be tedious to recount all the departmental committees and voluntary bodies of which he has been a member; but mention should be made of his work on the departmental committee some ten or twelve years ago which was concerned with the training and employment of midwives, and on the more recent interdepartmental committee which has had to do with the nursing services. He was also one of the founders of the Central Council for Maternity and Child Welfare and of the Central Council for the Social Welfare of Girls and Women. He first entered the service of the London County Council thirty years ago as a part-time officer, while he was deputy medical officer of health for the borough of Stoke Newington. A year or two later he came on to the whole-time establishment of the L.C.C., and was immediately charged with some large constructive enterprises, having to do particularly with the provision of tuberculosis dispensaries, with facilities for the diagnosis and treatment of venereal diseases, and with all the undertakings which are comprehended in the term maternity and child welfare. In 1926 he succeeded the late Sir William Hamer as the head of the public health and school medical services of the Council. It was as a school doctor in 1909 that he first became associated with the Council's work. At that time the number of school children examined each year, the number treated, and the provision made for treatment facilities were almost negligible. To-day, or until the war interrupted this great social service, the number of examinations, routine or special, and of reinspections is not far short of half a million a year, and the number of children treated at the school treatment centres or elsewhere is well over 300,000. Under Sir Frederick Menzies's guidance the transfer to his Council of the duties imposed by the Local Government Act, 1929, took place with such smoothness, notwithstanding the complicated nature of the services to be transferred and the vast area and population to be covered, that hardly any of the transferred staff or the patients realized that in a night—actually on the last night of March, 1930—a great new hospital authority had come into existence. This work meant the taking over by the public health department of seventy-five hospitals, with a total accommodation of about 70,000 beds, provided for practically all classes of diseases, together with a staff of some 19,000, and in addition the whole of the Poor Law district medical work for the county and a vast ambulance organization. All the services in the sphere of medical administration, whether conducted under public health or Poor Law powers, were unified under the control of the county medical officer of health, and the immediate successful development and co-ordination of the transferred services in London was of immense value as an inspiration and model to the country as a whole. All who have come into contact with his vigorous personality and practical mind will hope that Sir Frederick Menzies in his retirement may find abundant opportunity for placing his knowledge and experience at the disposal of official and voluntary organizations. We can ill afford to lose one who was described by the public orator at the University of Edinburgh some years ago at the conferment of an honorary degree as "one of the foremost exponents of preventive medicine in this country."

OPIUM: BOON AND BANE

In *The Trail of Opium*[1] Miss Margaret Goldsmith has, in nineteen chapters, told the story of the use and abuse of opium from prehistoric times to the latest operations at Geneva under the League of Nations. The book is pleasantly written and illustrated with pictures of opium dens and smokers and some of the ingenious contrivances adopted by illicit traffickers. There is nothing of the official apologist for the Indo-Chinese opium trade in these pages, and most of the authorities referred to are those who have written critically of Governmental action or inaction. The unedifying story of the East India Company's opium policy is related, leading to the conclusion that it was conducted on the cynical principle enunciated by Warren Hastings. He declared: "Opium is not a necessary of life, but a pernicious article of luxury, which ought not to be permitted but for the purpose of foreign commerce only, and which the wisdom of the Government should carefully restrain from internal consumption." The so-called "Opium Wars" of 1839 and 1857, officially asserted to have had no connexion with opium, were then condemned by Mr. Gladstone as unjust and disgraceful. The part played by the Earl of Shaftesbury and Mr. Cobden in opposition to the Indo-Chinese trade and the invidious attitude of Sir John Bowring are referred to. The constitution and conclusions of the Royal Commission of 1894, which justified the export of Indian opium to China, partly on the financial ground that the revenue derived from it was indispensable for the efficient government of India, are criticized. Mr. John Morley, in 1906, when Secretary of State for India, admitted that that Commission had "failed to satisfy the consciences" of those who had studied the question. A new policy of concurrent reduction of production of opium in China and its export from India was initiated in 1908. The author summarizes the work of the Shanghai Commission of 1909, and of The Hague and Geneva conferences and conventions, and concurs in the conclusion of the League of Nations that the limitation of the production of opium is essential alike to the suppression of illicit traffic and to the restriction of it and its alkaloids to medical and legitimate purposes. The advocacy of this fundamental necessity for dealing with the raw materials from their source is familiar to readers of the *Journal*, which has urged the adoption of this policy for the last twenty years. Due credit is given by Miss Goldsmith to the successful work of Russell Pasha and the anti-narcotics bureau in Egypt. Attention is called to the large proportion of revenue in the Straits Settlements derived from opium sales and also in British North Borneo and Brunei. The concluding chapters show how the "six-year plan" announced by China to rid the country of opium, of which at present it is one of the largest producers, is frustrated by the policy pursued since the Japanese occupation. According to the American representative on the Advisory Committee at Geneva, huge quantities of Iranian opium have been consigned to the Japanese army and firms in North China and Shanghai. From these sources drug-shops and clinics, under Japanese and Korean protection, are supplied, and so the drug is peddled to the Chinese. According to Dr. Wellington Koo, "a new form of chemical warfare" is thus added to military invasion and bombardment. *The Trail of Opium*, while perhaps not entirely free from some anti-opium prepossession on the problem, is well worthy of study by students of social welfare who are alive to the perils of narcotic addiction.

HIGH BLOOD PRESSURE

The problem of hypertension still bristles with difficulties, and the more we know about the condition the less inclined are we to dogmatism about causation. That it is by no means easy to evaluate experimental and clinical evidence in this field has been clearly noted in recent reviews.[1] [2] It seems to be generally accepted that arteriosclerosis must be regarded as a secondary or coincidental change in essential hypertension, while the absence of increased cardiac output or viscosity of blood in early cases of this disorder points unmistakably to peripheral vasoconstriction of some form as the fundamental pathological disturbance. The obvious suggestion that a disorder of the blood-pressure regulating mechanisms, especially those related to the carotid sinus, might be concerned is not entirely borne out on investigation, since hypertensive patients usually show normal vasomotor reflexes from this area. These findings do not, however, entirely remove the possibility that some limitation of the efficiency of the "moderator" mechanisms may be a factor. The theory that ischaemia of the medulla may play a part is apparently negatived by the normal functioning of the respiratory centres in patients with hypertension, and it seems clear that attention must be focused on nervous and humoral factors affecting the peripheral vasomotor endings of the autonomic nerves. Pickering pins his faith on chemical factors, mainly as a result of experiments on the blood flow through the hypertensive hand, which shows no abnormal increase when nervous influences are removed by raising the temperature, and he concludes that chemical forces are at work at the periphery. It must be admitted that it is apparently easy to produce pressor bodies by experimental ischaemia of the kidney. On the other hand, humoral agents have not yet been practically demonstrated in actual cases of hypertension, and it appears that the blood pressure of normal individuals does not rise when they are transfused with large volumes of blood from patients with hypertension. Such obstacles to a clear-cut case may have encouraged other observers to look more closely at the constitutional and psychological characteristics of the patient with high blood pressure. The difficulty of obtaining patients for investigation before the clinical picture and aetiological situation are confused by late vascular disease seems to have been overcome in a number of cases of essential hypertension which have been examined by American psycho-analytic investigators. Their studies reveal that these patients showed as common characteristics external poise, gentleness, and amiability. But, according to these workers, this docile and unaggressive façade concealed a strong rebellion which was much more representative of their real nature. Further confirmation of these interesting observations is required. It is not improbable that emotional disturbance may be the connecting-link between the neurogenic and humoral factors in hypertension.

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[1] *The Trail of Opium: The Eleventh Plague*. By Margaret Goldsmith. London: Robert Hale. (12s. 6d.)

[1] *British Medical Journal*, 1939, 1, 1.

[2] *Psychosom. Med.*, 1939, 1.

A MEDICAL MISSION IN CHINA

The League of Nations sent out a medical mission early in 1938 to assist the Chinese authorities to protect the civil population against epidemics, and an interesting account[1] of the work of the French contingent in the south of China has recently been given by M. A. Lasnet. He decided to follow the territorial organization already used by the Chinese medical service, and therefore sent to each of seven districts a medical officer with staff and a lorry, setting up his own headquarters in Canton. Co-operation with the Chinese local services, with the national anti-epidemic service, and with certain units of the Red Cross which were in the neighbourhood complicated the work of the mission but made it much more effective than it would have otherwise been. The laboratory was the central point, and without it nothing could have been done: its task was to carry out diagnostic tests and manufacture sera and vaccines. The three chief diseases which had to be dealt with were small-pox, cholera, and malaria. Small-pox is endemic over the whole of South China, especially in the Kwangsi districts. In spite of the initial difficulties, the mission performed in the course of a few weeks 1,200,000 vaccinations. Cholera is a summer epidemic, and constituted a very serious problem. A large staff was occupied in investigating, isolating, and treating the patients, disinfecting water supplies, inspecting markets, and other duties. A million and a half vaccinations were performed. The campaign against malaria had to be restricted to the distribution of quinine, as only a long-term engineering policy would free those marshy plains from the parasite. The mission took out over 1,500,000 tablets, but really needed four or five tons. It also had to set up, against the tradition of centuries, a sanitary organization in Kwangsi: to build latrines, sewage tanks, and incinerators; to protect wells; to carry out education and propaganda by many different means; and to instruct the authorities in running health services. It had to do all this under intermittent bombardment by Japanese aircraft, and afterwards under threat of invasion of the country. At the time of M. Lasnet's report the mission was still active.

ARTIFICIAL LIMBS AND AMPUTATIONS

The fine work undertaken by the Ministry of Pensions in providing artificial legs and arms to the 42,000 officers and men who suffered limb amputation through service in the war of 1914–18 is well known to the medical profession. The unprecedented demand for limbs stimulated the production of improved technical devices and higher standards of material and workmanship, while the ingenuity of the technician has been guided into the desired direction by the Ministry's surgeons responsible for choosing the most suitable limb for the particular case and supervising its fitting to the stump in accordance with the surgical requirements. Limb-fitting has thus become a newly and highly developed technique in surgical practice, and the Ministry can lay claim to have become a pioneer in the development of the modern surgery of amputations and in the design and construction of all types of artificial limbs and appliances. Beyond providing limbs for pensioners it meets the requirements of the Service Departments, and recently, by arrangement with Queen Mary's (Roehampton) Hospital Committee, the facilities at that hospital and the Ministry's limb-fitting centres in the provinces have been made available for civilian patients throughout the country. Lectures and demonstrations have also been given at Roehampton to surgeons nominated by public and local authorities and civil hospitals. An account of the special knowledge and experience gained in the organization of this service for the provision of artificial limbs is given in a handbook prepared by medical officers of the Ministry of Pensions entitled *Artificial Limbs and their Relation to Amputations*, which has just been issued by H.M. Stationery Office (price 3s.; post free 3s. 4d.). Its preparation was initiated by Dr. J. H. Hebb, the Director-General of Medical Services, before his present service with the Ministry of Health. The book deals with every important aspect of the subject, including the leading features of present-day principles and practice in the surgical fitting of limbs and details of specifications of various types of artificial limbs.

The Emergency Committee of the London County Council has received with regret the resignation, on health grounds, of the county medical officer of health, Sir Frederick Menzies, K.B.E., K.H.P. It is recommending the Council, at its meeting on Tuesday next, to accept the resignation with effect from November 2, and to place on record the Council's high appreciation of his services as medical officer of health for the past twenty-eight years. The Emergency Committee is also recommending the Council to appoint Dr. W. Allen Daley, the deputy medical officer of health, to succeed Sir Frederick Menzies as medical officer of health.

The Medical Research Council, at the invitation of the Ministry of Health, has formed a Therapeutic Requirements Subcommittee, which will advise the Ministry and the medical and pharmaceutical professions on matters relating to economy in the use of drugs and therapeutic substances. All communications regarding the work of the subcommittee should be addressed to Dr. C. H. Hampshire, 44, Hallam Street, London, W.1.

Lord Horder has, at the invitation of the Minister of Pensions, accepted appointment as honorary consulting physician to the Ministry.

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[1] *Bull. Acad. Méd.*, Paris, 1939, 121, 300.

WAR WOUNDS AND AIR RAID CASUALTIES

The following article is a supplement to the series of lectures on war wounds and air raid casualties printed in these columns*

CHEMICAL WARFARE AND THE DOCTOR—II

BY

E. M. COWELL, C.B.E., D.S.O., T.D., F.R.C.S.
A.D.M.S., 44th (H.C.) Division T.A.

Technique of Attack by "Gas"

Service medical officers should study *Gas*, by Major-General C. H. Foulkes (1936), where a full account is given of the various methods of employing chemical warfare in the field. These include the use of drift-gas from cylinders, mists and mixtures from projecters fixed electrically, Liven's drums, Stokes's motor bombs, "M" generators (thermo-generators on the smoke-candle principle, for generating clouds of the arsenic mists), sprays from aeroplanes, as well as various types of gas shell fired by the artillery.

Gas attacks on the civil population will be made from the air. Mitchener and Cowell, in their *Medical Organization in Air Raids*, 1939, quote General Golovine, who gives statistics showing that the complete over-whelming of a capital city by gas is impossible. Repeated attacks may be made by small formations of three to nine machines, or larger numbers—twenty-seven to thirty-six. As the air defence of this country becomes stronger this menace is proportionately diminishing. It is possible for gas to be sprayed by a low-flying machine or clouds to be laid at a height. The spray from the former may be seen coming from the machine and falls like rain; from the latter the mist may arrive from some distance, its presence being only appreciated from its effects.

For the success of a gas attack weather conditions must be favourable. Clear, mild, still nights, with an absence of mist or rain, afford the best chances for success, both for non-persistent and persistent gases. Heavy rain and a high wind will minimize the toxic effects. Clear sunny days cause rapid dissipation of the non-persistent gases; a raised ground temperature increases the volatilization of the persistent gases and gives rise to a high local concentration.

Counteraction of Gas Attacks

The object of any gas raids undertaken against the civil population will be to inspire panic, confusion, and terror, with such a lowering of national morale that peace will be insisted on at any price. The air menace may be averted in four ways: (1) Reliance on agreements, pacts, and action by such bodies as the League of Nations; (2) active defence, by the provision of a powerful Air Force; (3) passive defence—anti-aircraft units, batteries, searchlights, etc.; (4) air raid precautions. No. 1 needs no comment. The second and third are becoming stronger every day in this country. With regard to air raid precautions the Government's plans are gradually being perfected. But further organization and liaison between various departments, provision and training of more personnel, and repeated exercises and practice are required to render this arm of defence as efficient as the second and third.

The doctor not a member of the medical branch of the fighting forces will help in A.R.P. work. It has already been realized by the Home Office, Ministry of Health, and the British Medical Association what an important part the medical practitioner can play, whether surgeon, physician, or family doctor. He can help not only in preserving the calmness of the public, and preventing the effects of chemical warfare by correct prophylaxis, but also, by his knowledge of both first aid and treatment of gas, save life and hasten recovery.

It is essential that the whole nation be made gas-conscious. This applies not only to members of the A.R.P. services, including all medical personnel, but also to all members of the public. Refugee and evacuation camps may be attacked by gas as well as the densely packed centres of the cities. Further instruction is needed, and a stricter gas discipline, with frequent respirator practice, is urged. Details of protection by sealed rooms, protective clothing of different types, and the wearing of one of the three types of respirator are to be found in the Home Office Manuals. Dressing stations, first-aid posts, and operating theatres in vulnerable areas should not only be splinter-proofed but gas-proofed.

All doctors are advised to practise wearing an anti-gas respirator. Familiarity with the general service type will ensure the comfortable wearing of the civilian duty and civilian anti-gas types. Details may be obtained from the books, but actual frequent practice is essential. The doctor should be able to get his respirator on in ten seconds or less and wear it for at least one hour, even with spectacles on, without the eyepieces dimming or any loss of technical efficiency. One can lecture for forty minutes on the respirator alone without repeating oneself.

It is quite feasible to perform surgical operations wearing a general service respirator, even when the surgeon has to wear glasses. Wearing the haversack at the back instead of the front of the chest ensures a sufficient supply of air when wearing sterile clothing. Theatre sisters should be taught to wear either a civilian duty respirator or, better, the G.S. pattern slung at the back, in which position it will not get in the way when stooping over instruments.

Prompt diagnosis is the first essential. It must be at once ascertained whether the "casualty" has really been exposed to gas, and, secondly, if so, the nature of the gas must be determined. A record of each case should be made and preserved on the special form prepared by the Ministry of Health. Information on the following points can generally be given by the patient or a friend: (1) condition of exposure—that is, air, spray, exposure to contaminated clothing, etc.; (2) nature of the smell; (3) duration of exposure; (4) immediate effects; (5) late symptoms; (6) when did the exposure occur?

War Gases and their Effects: Group I—Lacrimators

The liquid lacrimators may be sprayed or dropped by bombs from the air. C.A.P. requires heat. The presence of one of these substances causes an immediate irritation of the sensory-nerve endings of the conjunctiva and cornea. Profuse watering of the eyes and spasm of the

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* Received for publication on August 4.

lids temporarily blind the victim. Further concentrations may cause mild respiratory discomfort. No permanent lesions are produced, and when removed from the contaminated atmosphere all symptoms disappear in one to two hours. C.A.P. may irritate and redden the skin. An account of one case was personally communicated to me by Dr. A. C. Coleman. A young lady stayed twenty minutes in a C.A.P. chamber. A few hours later she developed severe urticaria, which fortunately immediately responded to injections of adrenaline. Perfect protection is afforded by the respirator.

First Aid.—Diagnose on the immediate lacrimation and blepharospasm. Apply respirator and remove to clear atmosphere. Irrigate the eyes with warm saline (very seldom necessary). Reassure the patient; he will recover within twelve hours. Do not send him to hospital. Established cases do not require any special treatment.

Group II—Sternutators

These are the arsenic compounds, and require heat or detonation to form them into a fine mist of minute particles. This gas cloud may be almost invisible. There is a latent period and some minutes elapse before symptoms appear. Thus symptoms may arise or become worse after putting on a respirator; an untrained person tends to take off his respirator, thinking he is no longer being protected. This is in direct contrast to Group I, where symptoms are immediately relieved by putting on the respirator. The symptoms are those of severe pain in the nose and sinuses, with repeated sneezing, burning of the throat, sore eyes, aching gums, and possibly nausea or vomiting. Mental distress may be a prominent feature, and inability to think or concentrate is generally experienced. Although alarming, the symptoms generally disappear in an hour. No permanent damage is done, and these cases need not be admitted to hospital. Modern respirators contain cellulose pads to filter off the arsenic smokes.

First Aid.—Diagnose on symptoms and the history, and do not be deceived by the severity of the symptoms and the anxiety of the patient. Apply respirator; remove to clear atmosphere. Reassure the patient; recovery will occur in an hour or two. Do not send to hospital. If the pain in the sinuses is very severe, light chloroform inhalation will give relief. For a painful nose or throat 5 per cent. sodium bicarbonate solution may be used as a wash or gargle.

Group III: Vesicants

MUSTARD

Mustard is a very insidious poison. It may escape immediate detection and does not produce symptoms for some hours. Repeated exposure may lead to hypersensitivity. Lesions may result from spray from the air, splashes from bursting bombs, or slow vaporization from contaminated buildings, ground, clothing, etc. On the skin no immediate sensory effect is appreciated. The poison penetrates clothing and enters the skin deeply and quickly, producing an erythema only after some hours. Local oedema and capillary stasis follow; later the erythema deepens in colour, a pale centre appears, and a vesicle containing yellow serum is formed. This does not contain mustard. Intense itching is usually noted, and the moist parts of the body are chiefly affected. Secondary infection is liable to occur and healing is slow. The healed scars may be pigmented for a time.

Exposure to vapour only may produce extensive effects on the eyes, temporarily blinding the subject within a few hours after exposure. Contamination by droplets of splash or spray is more serious, and may lead to permanent blindness from corneal scarring. Symptoms may begin within half an hour, and soon the eyelids become painful and swollen. Intense oedema of the lids follows, together with swelling and reddening of the conjunctiva. Corneal opacities appear, the ocular conjunctiva may ulcerate, the tension is increased, and a profuse muco-purulent discharge takes place. Photophobia and spasm of the lids may be intense.

If the respirator is not put on soon enough then the nose, larynx, trachea, or lungs may be affected. Epigastric pain and vomiting may occur from the swallowed saliva. The effects, however, do not persist. Renal complications have been noted in fatal cases. Local oedema of the penis may cause retention of urine.

Mustard Vapour.—If in from twelve to twenty-four hours after exposure to a dilute mustard vapour the eyes become red, the voice is husky, and the skin erythematous a positive diagnosis may be made. Prevention consists in wearing protective clothing, applying the respirator, and washing in soap and water or rubbing in bleach ointment for one minute. First aid consists in changing all clothing, complete bathing of the body, and repeated eye lavage. This suffices for mild cases. Note that speed is essential: cleansing must be undertaken within two minutes for liquid and fifteen minutes for vapour, otherwise burns will result. The same applies to Lewisite, except that the poison is appreciated at once and the characteristic smell is always found.

Liquid Mustard.—Yellow detector disks reveal splashes of mustard as bright red spots (red for danger). If clothing is found contaminated it must be removed as soon as possible and the patient treated as mentioned above. If the eyes are contaminated warm saline irrigation must be carried out immediately and be maintained at hourly intervals. In the open, water from a water-bottle should be poured into the eyes, followed by a drop of liquid paraffin.

LEWISITE

Lewisite resembles mustard in its action, but is less insidious. It is early detected by its odour and has a shorter latent period, both in the eye and on the skin. In extensive burns acute arsenical poisoning may result. On the skin an immediate stinging sensation follows the application of liquid lewisite. Erythema occurs within thirty minutes; vesication, too, is early, and is complete within twelve hours. Clinically the effects of lewisite and mustard can now be sharply distinguished. The lewisite blister is clearly defined: it covers the whole erythematous area and is filled with a cloudy fluid containing leucocytes and arsenic. The mustard blister has a surround of erythema and is full of a clear yellow fluid, but contains no mustard. On dry clothing lewisite is less effective than mustard, and when the clothing is wet the lewisite loses much of its effectiveness owing to rapid hydrolysis. The fine spray of lewisite is even more dangerous to the eyes than that of mustard. Immediate irritant symptoms follow. In fifteen minutes an acute conjunctivitis occurs, oedema of the eyelids, pain, and photophobia rapidly supervene, and in three to nine hours the whole painful picture is produced, an effect which is only seen with mustard at the end of twenty-four hours. The ultimate prognosis is graver also.

Since the presence of lewisite is readily appreciated the respirator is usually put on early and affords protection. As in the arsenic smokes, the symptoms of irritation may appear even after the application of the respirator. In the absence of a respirator nasopharyngitis follows, and bronchitis may be established in twenty-four hours, which may lead to bronchopneumonia and death.

TREATMENT OF VESICANTS

Skin.—So long as droplets of mustard are visible on the skin bleach ointment will lessen the severity of the burn. This is made by mixing equal weights of "super-tropical" bleaching powder and white petroleum jelly. It is stable in ordinary climates. If the contamination is extensive, bleach paste is easier to apply. Bleach paste consists of one part (by volume) of "supertropical" bleaching powder mixed with two parts of water. The affected area is swabbed for several minutes until no further odour remains. Any of the following solvents may be used: petrol, methylated spirit, paraffin, etc. Care must be taken to avoid fire; the contaminated swabs, after careful handling, must be burned. Cleansing with soap and water removes the surface "gas" and will prevent burns if carried out within five minutes. The dresser should wear gloves. This method should not be attempted if erythema has begun, but swabbing should be employed. If there is a massive contamination, the application of bleach ointment is advisable. In the case of established lesions, erythema, if mild, will clear up as in sunburn, leaving a slight pigmentation and desquamation. Tannic acid jelly or solution should be useful. With vesications the aim will be to prevent secondary infection. Mustard burns should be treated on the surgical principles outlined by Mitchiner and others. Thorough cleansing—under an anaesthetic if necessary—is followed by the application of a tannic acid compress—layers of lint or gauze soaked in a 2½ per cent. solution of tannic acid, freshly made; this is left *in situ* for several weeks if desired.

Eyes.—As soon as the patient comes under medical care, and while he is being cleansed in the shower-baths, an opportunity is taken to irrigate the eyes with 2 per cent. sodium bicarbonate solution. If the eye is contaminated with liquid mustard do not wait for the onset of signs or symptoms, but continue the alkaline lavage as often and as long as possible. This treatment becomes difficult as the oedema and spasm of the lids increases. To relieve this apply 1 per cent. sterile atropine ointment twice a day (and in all cases where the cornea is damaged). Do *not* apply cocaine. Do *not* bandage the eyes—apply a light shade and instil liquid paraffin at frequent intervals. If the discharge becomes muco-purulent 2 per cent. argyrol twice a day is indicated. The treatment of corneal ulcers, with or without hypopyon, is best left to an ophthalmic expert. With vapour contamination only the prognosis is better and the patient may be immediately reassured. In mild cases irrigate every two hours with 2 per cent. sodium bicarbonate solution, instil liquid paraffin, and apply a shade or keep in a darkened room. In more severe cases treat as for liquid contamination.

The Respiratory Tract.—Rhinitis will respond to warm douches of 5 per cent. sodium bicarbonate solution. When there is laryngitis, rest the voice, keep in the fresh air, and give a paraffin spray or vapour inhalation. (Menthol, 10 grains, tinct. benzoin. 1 oz.; sig., 1 drachm to a pint of boiling water.) Some 2 per cent. of the mustard cases in the great war ended fatally. The majority of these deaths were from bronchopneumonia. To prevent this complication keep cases where the lungs are involved in special wards, warm and well ventilated. Isolate any case of secondary infection as it occurs. Menthol is useful in allaying coughing.

As pointed out in the *Medical Manual* already referred to, it is wise to send patients as soon as possible to a special convalescent centre. This will prevent the onset of "anxiety" neurosis and such conditions as functional photophobia and aphonia. Finally, doctors looking after civilian gas casualties should remember that gassing does not in itself cause a permanent state of ill-health. Undoubtedly many gassed patients will develop neurasthenia and apply for disability pensions. Properly handled, this state of affairs will not eventuate.

PROTECTIVE MEASURES

(1) There is the standard suit fully described in the Home Office manuals. None of the recent official publications, however, mentions the important work of Major Crowden of the London School of Tropical Medicine and Hygiene. Writing in the *R.A.M.C. Journal*, this officer describes a method whereby a man can continue to perform hard manual work in full protective clothing for several hours without ill effects. A light drill shirt is put on over the waterproof and kept constantly wet with cold water. The loss of heat by evaporation keeps the wearer cool. (2) Several other types of clothing exist for troops in the field. (3) For first-aid services there are the following: (*a*) rescue and first-aid parties—a heavy standard suit; (*b*) ambulance drivers—long coat, gloves, gum-boots, curtain, and respirator or eye shield; (*c*) undressers—protective apron with sleeves, gum-boots, and respirator (generally civilian duty). The methods of decontaminating clothing and buildings, etc., are fully described in the various Home Office manuals.

Group IV—Lung Irritants

These gases may be discharged from air bombs or cylinders carried on low-flying aircraft. The gas is heavier than air and is carried down wind. Immediate application of the respirator gives complete protection, but speed is essential. A single breath of phosgene may be very dangerous.

Pathological Action.—All lung irritants act on the bronchial tubes and alveoli, causing acute pulmonary oedema. A lacrimatory effect is also produced. Chloropicrin is four times and phosgene ten times more toxic than chlorine. On post-mortem examination the chief changes are pulmonary oedema with disintegration of the alveoli. The blood becomes concentrated and tends to form thrombi. Pulmonary oedema may occur within two hours of the gassing. In the first twenty-four hours the lungs are found to be full of blood and are oedematous, with patches of emphysema alternating with collapsed areas. A pleural effusion may be present. After the second day the oedema begins to disappear, but a secondary infection leads to pneumonic patches and pleurisy. The haemoglobin may rise to 140 per cent. in the blood, and is associated with pulmonary or systemic thrombosis.

Clinical Types.—Two groups may be distinguished: the acute type with violent onset, and the acute type with insidious onset. When the onset is violent phosgene in heavy concentration and chlorine and chloropicrin will cause immediate symptoms. The patient coughs, catches his breath, and complains of a pain in his chest. The breathing becomes rapid and shallow; deep breathing brings on a painful cough. Retching and vomiting occur and the patient is knocked out. With the onset of oedema the breathing becomes rapid and shallow and the patient becomes blue, with distended veins. (See *An Atlas of Gas Poisoning*, H.M. Stationery Office, 1939.) In phosgene poisoning this blue phase may be passed over and quick collapse follow, with a rapid pulse and symptoms of toxic shock. Here the patient may die in two to three hours after exposure. This group of acute cases may be classified into (1) mild cases—flushed face, increased respiration rate, and cough; (2) severe cases—"blue" type, with a full pulse; (3) severe cases—"grey" type, with toxic shock. Type (1) soon recover; Type (2) do well if the pulse does not rise above 100; Type (3) do badly, and death results from circulatory failure or bronchopneumonia. In the group in which onset is delayed persons exposed to phosgene go on with their duties for a few hours and then suddenly collapse with a rapidly increasing pulmonary oedema, often fatal. Sir William Horrocks described to me how this delayed action was discovered in 1915. Some young pigs were exposed to a low concentration of phosgene and appeared none the worse. Next morning, however, they were all dead.

In the early stages very few physical signs are to be found. Later the percussion note may not be impaired, but the breath sounds become feeble, especially over the back, where fine rales appear. Blue cases, which respond to oxygen, may do well, and the pulmonary oedema is also over within four or five days. Grey cases with heart failure do badly. Bronchopneumonia often supervenes. In the great war 80 per cent. of lung-irritant deaths occurred within the first twenty-four hours.

Diagnosis.—There is a distinctive smell, and the history will help. Chlorine and chloropicrin produce urgent symptoms even in low concentrations. Relief is immediate on applying the respirator. Phosgene and diphosgene, however, even though smelt, can be breathed without coughing in low but lethal concentrations. Suspect casualties should be carefully questioned and examined. If it is certain the patient has been exposed to a lung irritant he should be kept at rest for twenty-four hours and watched. If the exposure has been short and there are no symptoms, he may be discharged after a further twenty-four hours.

First aid must be begun as soon as a positive diagnosis is made. The patient must be treated as a stretcher case, be kept warm and as quiet as possible, and be put on a light diet. Make preparations for giving oxygen and performing venesection if signs of lung injury supervene (dyspnoea, tachycardia, cyanosis, frothy expectoration, and concentration of the blood).

Treatment of Established Cases.—Suspect cases must be kept at rest and observed for twenty-four hours. If no symptoms have arisen in the next twenty-four hours they may be discharged. In the acute stages the treatment consists in rest, warmth, venesection, and oxygen. If the patient is tided over the first few days the oedema will absorb and recovery is possible. Treat all lung casualties as stretcher cases and after admission to hospital keep them quiet in bed. All contaminated clothing must be removed as soon as possible. As in the treatment of wound shock, it is most important to keep the patient warm. Venesection is carried out on the appearance of cyanosis: 15 to 20 oz. (400-600 c.cm.) are withdrawn by acupuncture. It is possible that further experience may show that subsequent introduction of normal saline intravenously may be beneficial. If the cyanosis deepens and pulmonary oedema increases, oxygen is initiated. Venesection is harmful to the grey cases. Oxygen may be required to be given continuously for some days. Nurses should be instructed in the use of an oxygen tent, closed or open pattern, nasal catheter, or Haldane's mask. An average of five litres a minute will be required for each patient. In the great war it was found that no patient in whom a pink colour was obtained by the use of oxygen died from pulmonary oedema.

Expectoration may be encouraged by posture. The Tor table (Mitchiner and Cowell) provides a simple method of lowering the patient's head to allow the serous fluid to escape from the lungs. No drugs were found to be of value in the great war. If pneumonia supervenes, some of the new drugs may be tried; but no opportunity has yet arisen to test their efficiency under these conditions. In treatment of the convalescent the remarks made with regard to mustard will apply here also.

Group V—Paralysants

The diagnosis of this group presents no difficulties. *First Aid*: For both HCN and H_2S prolonged artificial respiration with administration of O_2 and CO_2 is indicated. In these cases some form of artificial respiration by apparatus, such as an "iron lung," Eve-Riley rocking stretcher, or the Tor tilter, may save life. Full details are to be found in the *Medical Manual of Chemical Warfare.*

Surgical Treatment of Gas Casualties

It will probably be found that the number of wounded and gassed cases will vary inversely—that is, there will be wounded only and no gas, or vice versa. In individual cases decisions must be made according to the circumstances. A man contaminated with mustard must be stripped and cleansed and reclothed before being admitted to the pre-operation ward and theatre. General anaesthesia may be inadvisable in the case of lung-irritant poisoning, but gas-and-oxygen preceded by menthol inhalation will probably be safe in mild cases. Operating theatres, as already noted, should be splinter-proof and gas-proof. If these precautions have not been taken the surgeon and all the members of his team should be prepared to work in respirators if necessary.

Concluding Remarks

Undoubtedly many gas casualties will arise among women and children. The children will require extra nurses, and will probably fare worse than adults. I saw infants with mustard burns in some of the villages near the line in France during the last war, but only in small numbers. They made constant demands on their mothers.

When gunpowder was introduced the men of the time said, "How terrible; cannot we go back to the humane bow and arrow?" The same has been said of chemical warfare. But with careful education, preparation, organization, discipline, and determination it will be easier to protect the people of this country against gas than against high-explosive or incendiary bombs.

A short bibliography is given below: for a very full list of authors (826) the reader is referred to Hanslian, Vol. i, *Der Chemische Krieg,* 1937.

I wish to acknowledge my indebtedness especially to the most excellent *Medical Manual of Chemical Warfare,* 1939, which should be read by all doctors.

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DISPERSAL OF RADIUM IN WAR TIME

We have received from the chairman of the Emergency Measures Committee of the National Radium Commission the following preliminary memorandum on dangers of the dispersal of radium in war time, written by A. R. Greatbatch, B.Sc., of the Research Department, Woolwich.

Dangers from Aerial Bombardment

In considering special dangers from aerial bombardment particular attention must be given to the disruptive action of a high explosive bomb upon radium containers and the probable dispersion of radium dust over a wide area. The effect of such disruptive action cannot be stated in precise terms or with exact detail, as the extent of the damage will depend upon a number of factors, including the type and size of bomb, the general protection afforded by the building housing the radium, the material and design of the container, and its actual position with regard to the bomb when the explosion occurs, etc.

It is therefore necessary to examine the effect of a bomb explosion in rather general terms and apply them to the particular case of radium. For this purpose it is usual to differentiate between the blast effect and that due to the fragmentation.

Blast Effect

Blast effect is caused by the extraordinarily high speed of the explosion and the succeeding pressure wave. In the case of a 500-lb. bomb—a size which may be expected to be used by enemy aircraft—any object within a range of from 20 to 25 ft. would be subjected to extremely high stresses. Large objects, unless exceedingly strong, would be shattered and smaller objects if suitably placed may, in addition, be hurled away with a velocity approaching that of the velocity of a bullet leaving the muzzle of a rifle. Glass containers within this range would undoubtedly be completely dispersed, and unprotected metal radium needles would almost certainly be disrupted and the contents scattered. Any body or envelope surrounding a needle would afford it some protection, and it is even conceivable that a needle buried in a human torso would escape destruction under some circumstances. Generally speaking, the stronger the envelope the greater the protection, and it is considered that a reasonably large measure of protection would be given by a suitably designed steel container which, unless made of special bullet-resisting steel, would require to have walls of 3 in. thickness or more entirely surrounding the radium.

Effect of Fragmentation

The danger from fragmentation is of a different nature. Here there is a possibility that a radium container may be struck by one of the many thousand bomb fragments which are hurled by the force of the explosion at velocities reaching double or even treble that of the muzzle velocity of a bullet. The danger range may extend to over 100 ft. from the bomb, and a direct hit by a fragment within this area would shatter a container unless heavily protected in the manner already described.

The protective value of the building which houses the radium should not be overlooked nor overrated, and it should be related to the fact that modern armour-piercing bombs dropped from a height of 10,000 ft. or more are capable of penetrating through about 5 ft. of concrete or about 30 ft. of earth. Thus to attain complete protection from both blast and fragmentation from a 500-lb. H.E. armour-piercing bomb it is necessary that the radium should be covered by well over 30 ft. of earth. The recommendation of the conference that radium should be sunk to a depth of 50 ft. in the ground will therefore ensure safety from danger of radium dispersal in all circumstances, including a direct hit. Similar safety might be attained by heavy concrete buildings of the requisite thickness, but the cost would be very high.

HOARDING OF OXYGEN AND NITROUS OXIDE CYLINDERS

The Ministry of Health in a notice issued on October 7 reminds hospitals, private individuals, and industrial concerns that it is contrary to the national interest for them to hoard oxygen and nitrous oxide cylinders, whether filled or empty. While there has been a definite response to the appeal made at the beginning of September the Ministry is informed that there appears to be a renewed tendency to hold undue supplies. The adequacy of the existing supplies can only be ensured if cylinders are not held in excess of actual requirements and if they are kept in constant circulation. Empty cylinders should be returned with the minimum of delay to the suppliers by whom they were issued.

Correspondence

Radium Precautions

Sir,—Dr. Cochrane Shanks is being wise after the event. There have been no air raids, therefore all precautionary measures have been scare measures. In April a letter appeared in your columns (also in the *Lancet* and *Nature*) outlining a scheme whereby radium could be got into safe keeping as an emergency measure. Not a single dissentient voice to this scheme was publicly raised. It was put into operation, and on the eve of the declaration of war it is probably true to say that over 95 per cent. of the country's radium was safely at a depth in boreholes.

Within four days of the declaration of war we were parties to discussion as to how this radium could be got out of the boreholes and put to the service of cancer and other patients under reasonable conditions of safety. These discussions have led to the formulation of a practical scheme which has for the last week been under consideration by the Ministry of Health. Dr. Shanks strikes a false note when he holds those who have been concerned with these measures of emergency, and then with schemes of war-time treatment, as responsible for the death of cancer patients, so far denied radium treatment since September 3.

If Dr. Shanks has any real doubts about the danger of dissemination of radium under the action of high explosives, we would recommend him to read the article by Mr. Greatbatch, entitled "Dangers of the Dispersal of Radium in War Time" which you have for publication in the current issue. [See left-hand column.]

Dr. Shanks's vision of the radium service of a hospital as being carried on with the commodity all tucked away in the basement safes is rather at variance with the everyday experience of it being where it is wanted—namely, in the wards, clinics, and operating theatres.

This letter may serve a purpose if only to remind your readers that the actions taken in the first instance were persistently stated to be emergency measures, and that since the outbreak of war efforts have been, and are being, made to get radium back into use under reasonable conditions of safety.—We are, etc.,

Sidney Russ,
London, W.1, October 9. George F. Stebbing.

Organization of the Emergency Medical Services

Sir,—Professor A. W. Sheen (*Journal*, October 7, p. 741) has raised a question of great importance which should receive immediate consideration. During the last war the Military Orthopaedic Hospitals (afterwards called Special Military Surgical Hospitals) were organized under the direction of Sir Robert Jones. The principles upon which their organization was based were:

That the surgical staff consisted of orthopaedic surgeons or at least of surgeons who possessed a special aptitude for and interest in the mechanical side of their work.

That the hospitals should be fully-equipped and staffed not only for the surgical and mechanical side of their work, but also for all forms of physical treatment and for rehabilitation by physical exercise, games, and occupational therapy.

That the treatment from as early a stage as possible right down to the completion of functional recovery should be carried through in one institution and under one directing head.

There can be no doubt that these hospitals had a great success. Unfortunately the principles upon which they worked were not adopted by civilian hospitals during the post-war period. But they were brought back into prominence by the British Medical Association's report upon the treatment of fractures, and the complete fracture department recommended in the reports of the Interdepartmental Committee on the Rehabilitation of Persons injured by Accident is practically an orthopaedic unit in this sense. If such units were necessary for civilian injuries, surely they are more so in war. Should we not get on with their organization and arrange for the transfer of suitable cases to them at as early a stage of treatment as possible?—I am, etc.,

London, W.1, Oct. 9. R. C. ELMSLIE.

Planned Psychotherapy in War Time

SIR,—Many comparisons have been drawn between the preparedness of the nation now and in 1914. Your correspondence columns bear striking testimony to one great difference: whereas in 1914 the majority of the medical profession were sceptical as to the value of psychotherapy, to-day we are discussing the best means of utilizing it for the rehabilitation of the inevitable psychological casualties. Dr. Geoffrey Evans bids us look in the first place to ourselves; and it is true that no doctor can remain a "neutral observer," so closely is the sufferer observing him. In the next place comes Dr. Telfer's plea for the establishment of local treatment centres, a practical step which some of us were hoping to see included as additional benefits under National Health Insurance before the outbreak of war altered the face of things. But we shall have to put our own house in order, remembering, as Rudyard Kipling said of the construction of tribal lays, that every single school of psychotherapy may be right in the sense that in skilled hands each of several methods may be successful. Do not let us therefore emphasize our differences too vigorously, lest Authority, puzzled by them, makes them the excuse for doing nothing at all. I have reason to believe that this is a real danger, and we are all agreed it would be a real disaster.—I am, etc.,

London, W.1, Oct. 10. W. LANGDON-BROWN.

Industrial Dermatitis

SIR,—The letters which have been appearing in the *Journal* since August on the above subject raise many points of practical importance. When, as in cases of workmen's compensation, medicine and the law meet for the common purpose of doing justice they necessarily approach the same point from different angles. The law must concern itself with words and the possible interpretation of them. Its definitions must be clear and precise. In medicine, whether general or special, such well-defined lines can rarely be drawn. It is therefore very desirable, as Dr. Ingram points out (September 9, p. 584), to quote the wording of the Act correctly when making any criticisms of it. "Dermatitis produced by dust or liquids" are the words that the law gives us in the way of guidance.

There is happily no definition of "dermatitis" or of "dust" or of "liquids." Indeed, the very vagueness of the wording is its strength. Occupations are so varied and the physical and chemical factors concerned are so many and so rapidly increasing in number that any attempt at a closer definition would weaken rather than strengthen the purpose of the Act. If any change is to be made in the future wording it might well be to replace the term "dermatitis" by the still more vague words "disorder of the skin" or "skin eruption." When the Act was drawn up the term "dermatitis" had no defined place in the category of diseases of the skin; to-day it has been applied, with more or less accuracy, to certain particular groups to which many skin eruptions properly recognized as of occupational origin certainly do not belong.

There is one point in Dr. Ingram's letter which I venture to think is perhaps a little too dogmatic. He says: "If a substance is suspected of causing dermatitis in an individual, then the application of that substance to the skin—in the form of a 'patch test'—will prove whether or not it is capable of producing dermatitis in that particular individual." Whilst a positive reaction may be decisive, a negative result hardly warrants the opposite conclusion. All parts of the skin are not exactly the same in their reactions to an irritant, and unless the dust is applied to the same part of the body, for the same period of time and under the same conditions as it was when at work, the comparison of its effects hardly seems justified.

Some of your correspondents suggest that if a person, known to have suffered off and on from what we used to call eczema, gets an attack while employed it is wrong that he should receive compensation for "dermatitis produced by dust or liquids." This will depend on circumstances. Such a person may be one whose skin is hypersensitive and readily flares up into a typical generalized eruption by undue exposure to dust or liquids which would have no such effect on a normal skin. In such a one this particular attack of dermatitis may rightly be said to have been produced by dust or liquid to which he has been exposed in his work.

There is one point which I think has not been alluded to in this correspondence, but on which some interesting and suggestive observations have been recorded by MacCormac in the *British Journal of Dermatology and Syphilis* (1937, **49**, 409). From time to time cases undoubtedly due to occupation occur in persons who have for years, perhaps all their working life, been exposed to identical working conditions as regards dust and liquids, yet they have never suffered from skin trouble before. This is sometimes urged by the other side as decisive against its occupational origin. Actually, however, this argument omits one important factor—namely, that the workman has never been the same age before! Like other systems of the body the skin undergoes changes in structure and composition at different periods of life. The skin of an infant is not the same as that of an adult; that of old age differs from that in the prime of life.

It is well known that in many infants who suffer severely from eczema during the early months of life the trouble disappears completely with the oncome of childhood. In common parlance (which sometimes contains more than a grain of truth), "they grow out of it"! Similarly, as age advances and degenerative changes take place in the tissues, skin troubles do arise. May it not be that the sensitivity of the skin to irritants also increases—"they grow into it"? Nor must it be forgotten that "age of tissues" does not always correspond with number of years.—I am, etc.,

Sheffield, Oct. 1. ARTHUR J. HALL.

Psychological Treatment Centres

SIR,—I see among various letters in the *Journal* of October 7 one headed "Psychological Treatment Centres" (p. 743). It does not yet appear to be generally known that some of the pre-war out-patient departments for this purpose have been reopened and new ones are being established in convenient institutions under a Ministry of Health scheme.

Encouragement from M.O.H.s is, of course, very desirable and I am sure will be forthcoming if the preventive aspect is kept in mind, but those who experienced anything of the worst Barcelona air raids declare that the strongest minds get shaken by high explosives, so that much of the work may turn out to be therapeutic rather than preventive, and far from quibbling about methods of psychotherapy perhaps we shall be only too glad to use "any good school."—I am, etc.,

London, N.4. R. F. FIDLER.

Emergency Treatment of Burns

Sir,—I am surprised that the first serious criticism (*Journal*, October 7, p. 745) of the use of picric acid in first-aid posts should come from America. Surely most of us have seen the man who has been incapacitated for many weeks through an extensive dermatitis as the result of the application of picric acid to a small burn which might otherwise have kept him off work for a few days. In burns in children treated with picric acid toxic erythematous rashes are seen even more frequently than in adults, and in a recent series of 400 burns and scalds treated in a children's hospital I have had ample opportunity of dealing with the results of first-aid treatment with this drug.

Like Dr. R. L. Sutton, I appreciate that this method of treatment has not been advocated without careful consideration, but I would be interested to learn of the difficulties in the way of the use of tannic acid, even in relatively unskilled hands. From a fairly extensive personal experience I can fully endorse Dr. Sutton's claims for gentian-violet in hospital practice. Unfortunately, gentian-violet is not always available as a first-aid application, and it may prove unpopular among first-aid workers, whose hands and clothes will certainly become generously stained. Would it not be preferable to use tea in place of picric acid? Tea is available in all houses and in many first-aid posts! The simplest method is to make lumberjack's tea by boiling a handful of tea in a pan of water. The dressing is soaked in this strong solution when cool, and bandaged in position. Adequate cleansing and re-coagulation will of course be carried out in more appropriate surroundings. —I am, etc.,

Glasgow, Oct. 7. Wallace M. Dennison.

Physical Medicine in War Time

Sir,—The letters of Dr. W. Garton (September 16, p. 622), Mr. J. S. Kellett Smith (September 23, p. 664), and Dr. C. B. Heald (September 30, p. 699) have interested me enormously, but they are dealing with the treatment, by physical medicine, of the later results of war injuries.

During 1914 to 1919 I was stationed in Boulogne, and I started physical treatments in a small way at No. 7 Stationary (Officers) Hospital, to which I was then attached, in October, 1915. The work was so successful that, on the suggestion of General Sir Arthur Sloggett, the British Red Cross Society erected and equipped a department, attached to No. 83 General Hospital, with a large treatment room, wards for officers and other ranks, waiting rooms, consulting-rooms, etc., which was opened in June, 1917, and of which I was put in charge. Naturally the type of cases that were referred for treatment were of the milder sort—for example, myalgias (lumbagos, etc.), sciatica, and other neurites and neuralgias, synovitis (chiefly knees), sprains, strains, contusions, the paralyses, aphonias, etc., after shell-shock, and so on. A victim to any of the above is as much *hors de combat* for the time being as one with a more serious wound or illness, and it was found that if such cases were evacuated to England they were usually sent to some small hospital in the country and very little was done for them. By treating them on the spot we found that nearly 80 per cent. were made, and kept, available for military service in France. In other words, there was a genuine economy of man power.

Of course a staff of nurses trained in the administration of physical treatment and of masseurs is necessary, but these are easier to procure now than when I started the department; I had to teach all the nurses myself, but I was fortunate in securing excellent masseurs.

If the war is to go on through the winter it would be well worth considering the establishment of such a department at a base in France without delay. Should the scheme be thought worth considering I have the full reports of the work done in my department, and I should be glad to show them to the proper authorities.—I am, etc.,

Cheltenham, Oct. 2. J. Curtis Webb.

Anaesthesia in War Time

Sir,—Most anaesthetists will agree with your correspondent "G. D. G." who advocates the use of Shipways apparatus for war surgery, and a set of Boyle's bottles make a most excellent Shipway. There is one difficulty, however, in that a set of bellows for the apparatus appears to be unobtainable. I have tried for several weeks in vain to purchase the ordinary Junker bellows. Gas and oxygen, however, appear to be readily available.

I am surprised that attention has not been called to the great value of vinesthene-ether mixture used with an open mask for war surgery. The induction is quick and pleasant, and relaxation can be obtained with light anaesthesia. This appears to be an ideal method for use by students, nurses, and inexperienced anaesthetists.

Finally, I would like to make a very strong plea for the use of gas-and-air analgesia for painful dressing of war wounds. At the Wellhouse Hospital we have used gas-and-air analgesia for all painful dressings since the winter of 1933, and we are deeply impressed with its immense value. The patient is given twenty breaths of gas and air before the dressing is started and the administration is continued during the dressing. Very few patients indeed fail to obtain relief.—I am, etc.,

New Barnet, Oct. 7. John Elam.

Sir,—I have read with amazement a letter from your correspondent "G. D. G." on anaesthesia in war time in your issue of October 7. He advocates the use of chloroform and ether in military surgery and rules out all the newer anaesthetics which have so largely replaced chloroform and ether in civilian practice, greatly to the benefit of the patient. He bases his contention on experiences in the great war and would like us to put the clock back twenty years in order to conform to the practice of that period. He states that in this war we shall be operating on men in a sound physical state, which to my mind is an extraordinary description of men who are likely to be suffering from shock or haemorrhage or toxaemia, and possibly a combination of all three. I have little doubt but that much of the mortality, and particularly the morbidity, of the last war was in fact due to saturating these casualties with protoplasmic poisons such as chloroform and ether.

"G. D. G." refers to modern anaesthetic machines as contrivances. I can only say that that may be how they appear to the uninitiated. Finally, he says that without access to mortality figures one can safely say, speaking from actual experience, that deaths due solely to chloroform or ether were an unknown factor. I quite agree that without mortality figures one might safely say anything.—I am, etc.,

Portsmouth, Oct. 8. G. M. Herriott.

Sir,—May I endorse most strongly all the points made by "G. D. G." (*Journal*, October 7, p. 744). I gave many hundreds of anaesthetics in casualty clearing stations during 1916–17–18, and taught selected sisters as well. I found that using a small brazier's foot-pump for the Shipway (a football bladder made a good reservoir and stabilizer) saved much weariness and left a free hand. The administration of gas and oxygen was possible in static conditions, but fifty bottles of chloroform and ether have only the weight and bulk of one gas cylinder and therefore an immense advantage for mobile and field work.—I am, etc.,

Oct. 8. W. F. B.-S.

Infectious Diseases in War

Sir,—My object in seeking your space is because the work I have been doing in the epidemiological field during the past fifteen years leads me to believe that taking a correlative view of so-called "infectious diseases" instead of considering each to be an entity caused by a specific micro-organism affords greater guidance in preventing and combating them. I imply that so-called "infectious diseases" are acute manifestations of disease caused by microbial invaders. The manifestations of disease produced are identical and are brought about in the same way as when the invaders are physical agents and chemical poisons; because the area in the body which is attacked and the lesion generated are determined by and are the result of the chemico-physical changes undergone by the host's first line of defence (which resides in what I call the protein particles in the plasma). Indeed, most of the signs and symptoms and the majority of the lesions produced are the direct result of the damaged or changed protein particles which develop invasive properties.

For the sake of description, microbial invaders can be divided into those which cause infections from without and from within. The former are more independent, they subject the protein particles to more profound chemico-physical changes, they circulate in the body and enter the lesions that are produced, a more perfect immunity is established against them, they cause relapses and not fresh infections, they are prevented from becoming active with greater ease, and they are better combated with chemotherapeutic than with immunological preparations. The latter reside in the large intestine, which they seldom leave, they develop in cycles, which makes them more active at certain times than at others, they cause fresh infections, they are prevented from being active with great difficulty, and their activity is better combated with immunological than with chemotherapeutic preparations. Micro-organisms which now act as invaders from without are, in my view, either retrogressive or progressive phases of parent forms, which evolved from micro-organisms that entered the intestinal canal with the food, and they began their career as harmless saprophytes. As these changes are continuous there are some micro-organisms which have not yet gained complete independence and others which are beginning to become independent. These two groups of micro-organisms unite the two divisions. The factors which keep these processes dynamic are unfavourable climate, unwholesome food, inadequate elimination of the waste products of food, insufficient air and outdoor exercise, and worry. Man has influence over all these factors with the exception of climate, and were he to use this influence properly the incidence of so-called "infectious diseases" would be reduced to a level which could never be attained with immunological preventive measures.

A so-called war-time "infectious disease," trench-fever, is the result of a number of these factors acting in unison and without necessarily the assistance of micro-organisms to so damage the host's resistance as to make the protein particles act as invaders. So-called venereal diseases are caused by micro-organisms which have completely gained (syphilis) and nearly so (gonorrhoea and soft sore) their independence. The *Vibrio cholerae* has not yet become completely independent, as it is only capable of causing an infection when the time is ripe. The *Pasteurella pestis* is completely independent, and the same may be said of the Spirilla and Spirochaetae. The Rickettsiae invade and cause disease most readily when the proteus group of micro-organisms is active in the intestinal canal. The Clostridia have gained their independence, but they do not cause a manifestation of disease until they have subjected some of the protein particles to a certain chemico-physical change which results in the production of the so-called "toxin." The toxin is a product of the invaded and not of the invader. All the other infections mentioned in your annotation of September 30 (p. 694) are interconnected and they fall into the class of infections from within, they are caused for the most part by mutative forms of the *Bacillus coli communis*, and their activity is responsible for a syndrome to which the name "influenza" can legitimately be given. Some of the causative micro-organisms are sub-phases, or retrogressive forms of the parent micro-organisms; the streptococci, for example, from Friedländer's bacillus. Others are progressive forms like Eberth's bacillus from the *Bacillus suipestifer*. Both of these types of micro-organisms are becoming independent. Friedländer's bacillus plays the greatest part in the production of the common cold and influenza. It is completing a cycle this coming winter, when a severe epidemic may be expected, in the process of which parts may be broken off from the protein particles to which the name "filterable viruses" is given. These filterable parts of the host's main resistance are most readily formed during a pandemic, the next of which may be expected in the winter 1946-7. The streptococci become most active when Friedländer's bacillus is inactive. One of the forms causes scarlet fever, and the changes the protein particles undergo as a sequel are responsible for measles. The retrogressive changes—that is, the development into so-called ultra-microscopic viruses—the protein particles may then undergo cause variola, varicella, herpes zoster, mumps, anterior poliomyelitis, and encephalitis lethargica, whereas the progressive changes, which I call "re-hydration" and "hydration," result in the production of German measles, glandular fever, and the various forms of leukaemia. The activity of the streptococci stimulates the diphtheroid bacilli to develop into the Klebs-Loeffler bacillus, with the possible production of diphtheria. The last war was fought in a non-typhoid era, which partly explains the low incidence of typhoid fever. A new era began in 1930, and as the *Bacillus suipestifer* is growing more active a higher incidence of the infection may be expected in the present conflict to whatever extent preventive inoculation is practised.

Infections from within are not spread by the passage of micro-organisms. A so-called "infectious" individual produces an environment (for want of a better word) an entrance into which by another individual can only result in the latter becoming a victim provided the micro-organism in the colon of the entrant is on the threshold of becoming pathogenic and the main defensive mechanism in the plasma of developing invasive properties. Were more known of the nature of the protein in the plasma the riddle of disease would be solved.—I am, etc.,

London, W.1, Oct. 2. J. E. R. McDONAGH.

Urine Testing by Medical Boards

SIR,—I am sure many medical members of military boards would feel grateful to you for improving the present unsatisfactory arrangements (in fact, their complete absence) whereby recruits are not instructed beforehand of the necessity to enable the board to examine their urines. A large proportion of them empty their bladders just before their arrival, with obvious results. A simple reminder enclosed with the calling-up notice would go a long way to minimize what at times is a serious hindrance to the smooth working of this (at present) most important branch of medical work on a nation-wide scale. A similar suggestion was recently made from the lay side, but for an unknown reason it was not taken due notice of by the respective authority. There would thus appear to be an opportunity for a request by the appropriate medical sources.—I am, etc.,

London, W.10, Oct. 3. G. DE SWIET.

Evacuation

SIR,—The outspoken remarks by Dr. I. C. Keir in your issue of October 7 (p. 745) on the need for education in "the rudiments of personal cleanliness, self-respect, and (incredible as it may seem) the use of a lavatory" should be a source of inspiration to the Board of Education and the Ministry of Health. It is well known that personal hygiene is not on the syllabus of the training colleges. It is easy to understand, therefore, why it is not in the curricula of the schools. The parents have been compulsorily educated for some three generations, and have learnt to ignore the necessity of this subject as one that should be taught, so they are unable to instruct their children. Dr. Keir has opened our eyes to the gap in our learning. May it be hoped that those who are in power will see that it is filled.—I am, etc.,

London, W.1, Oct. 7. OCTAVIA LEWIN.

"Black-out" Problems

SIR,—There is an urgent problem which calls for solution if the health of our civilian population is not to be seriously affected—the maintenance of a "black-out" which excludes light without excluding fresh air. Many people are now spending long periods in rooms inadequately ventilated. The periods will be longer in the darker days of winter. Already one has only to travel in public vehicles and mix with one's fellows to see that a number of people are suffering from colds. What effect will present conditions have on the spread of pulmonary tuberculosis and other infectious diseases as well as on the general health? The rationing of coal, gas, and electric light will affect the problem of heating. Inadequate illumination affects eyesight. "Blacking out" is not easy, and such blacking out as can be quickly replaced (for example, at night if removed for sleep) calls for special methods. There must be many methods for meeting the problems of ventilation, heating, and eyestrain, so I write to "ventilate" the subject.—I am, etc.,

London, W.1, Oct. 6. M. E. Ormsby.

Urethrography

Sir,—Perhaps the authors responsible for the coinage of that inelegant word "urethrography" may be permitted to make a few comments on the article under this title by Mr. James Kemble in the *Journal* of September 30 (p. 683).

In our work, which was described in a monograph entitled *The Radiographic Examination of the Male Urethra,* we had neither the advantages of the modern hot cathode tube nor of the fluid type of lipiodol. Radiographic technique has made great strides since 1925. But the experience which we gained in breaking new soil may be of some value in developing the theme on modern lines. It is impossible to obtain a satisfactory radiograph of the filled prostatic urethra unless the exposure is made while the opaque fluid is actually passing along this segment at the critical moment. To accomplish this a *constant stream* must be flowing through the urethra into the bladder. The use of a glass syringe was found to give good results in some cases, but it was discarded in favour of a simple manometric method which was much more positive. By employing this technique the whole urethra, anterior and posterior, and the bladder base are shown simultaneously on one film.

The dorsal position of the patient was used in the first experiments, but was given up in favour of the ventral position. With the patient supine, unless the rectum is quite empty the base of the bladder will receive impressions which simulate those normally produced by intravesical projection of the prostate. In the prone position this source of error is eliminated. Also, as the urethra is relatively anterior, a film placed next to the pubis will give sharper definition than one under the buttocks. Injection with the patient prone is quite simple. Lastly, a film taken after evacuation of the opaque fluid from the bladder is of definite value as an index of the amount of residual urine. Urethrography has found a place in some of the leading urological textbooks in America, and it is encouraging to find evidence of renewed interest being taken in the method on this side of the Atlantic.—We are, etc.,

Paul Cave.
London, W.1, Oct. 3. G. L. S. Konstam.

Manzullo's Tellurite Test for Diphtheria

Sir,—In your issue of June 24 (p. 1291) you wrote concerning some recent Manzullo tests, "Reliance on the test would deprive one case in six of necessary immediate serum treatment and lead to the unnecessary administration of serum to nearly 50 per cent. of non-diphtheritic cases."

It seemed to be of interest to discover how the test acted in Dublin. By the kind permission and with the help of Dr. C. J. McSweeney, the medical superintendent, I applied the test to seventy-five unselected patients admitted to Cork Street Hospital with pharyngeal exudate. Forty-three patients diagnosed as diphtheria and positive on culture yielded thirty-eight positive and five negative M (Manzullo) results; eleven "clinically doubtful," confirmed by culture, yielded two negative M results; seventeen cases of follicular tonsillitis gave six positive and eleven negative M results; while four cases of Vincent's angina all showed deep blackening—that is, positive M results. Thus in fifty-four diphtheria patients seven (13 per cent.) gave a false M negative result, while among thirty-one non-diphtheria patients ten (33 per cent.) gave a false positive. These figures for Dublin agree fairly closely with those in your note.—I am, etc.,

J. G. Tynan, M.B.,
Dublin, Oct. 5. Assistant Medical Officer, Cork Street Hospital.

Medico-Legal

DRUG ADDICT'S POSE AS DOCTOR

William Arthur Young, a morphine addict, at the end of July called on a Hampstead doctor and said that his name was Alexander McLean, that he was a doctor from Canada, and that four years ago he had had a serious operation, as a result of which he was in great pain. He asked for a prescription for morphine. The doctor found scars confirming his story and prescribed for him. Next day Young returned, saying that the prescription had been ineffective, and asked for another. He appeared to have a good knowledge of the medical profession, and the doctor gave him a prescription for 5 grains. A few days later he called again, saying that he had accidentally dropped most of the tablets down the sink. He obtained a prescription for 5 grains more. Next day he borrowed 10s. As he did not return the doctor made inquiries, and when Young came back ten days later asking for another prescription he was arrested and charged with unlawfully possessing 10 grains of morphine. He had on him a syringe and five needles.

Young pleaded guilty and told the court (*Times*, August 28) that he had called on other doctors and got prescriptions for morphine. The authorities stated that he had obtained 74 grains from eight different doctors at Brighton in nine weeks, and that at other towns he had collected 1½ grains a day during May. He had had five previous convictions. He had trained as a male nurse. Mr. L. R. Dunne, the stipendiary magistrate, sentenced him to twelve months' imprisonment, saying that his only possible chance was to be placed somewhere where he could not get drugs and would receive medical attention to fortify him against the craving for them.

Universities and Colleges

UNIVERSITY OF OXFORD

A decree was approved in Congregation on October 6 permitting any member of the University during the period of the present emergency to supplicate for a degree in absence on any degree day provided he has received permission from the Vice-Chancellor and Proctors on the grounds that he was prevented from taking the degree in person by reason of military service or other such urgent cause.

UNIVERSITY OF CAMBRIDGE

For the present the University Library will be open on weekdays from 9 a.m. to 1 p.m. and again from 2.15 p.m. until 4 p.m.; on Saturdays from 9 a.m. to 1 p.m. only. During the winter months it will be necessary owing to lighting restrictions to close at 3.30 p.m.

UNIVERSITY OF ST. ANDREWS

At a graduation ceremony held on October 6 the honorary degree of LL.D. was conferred upon William Graham Campbell, M.B., C.M., L.D.S., lecturer in orthodontics in the University of St. Andrews.

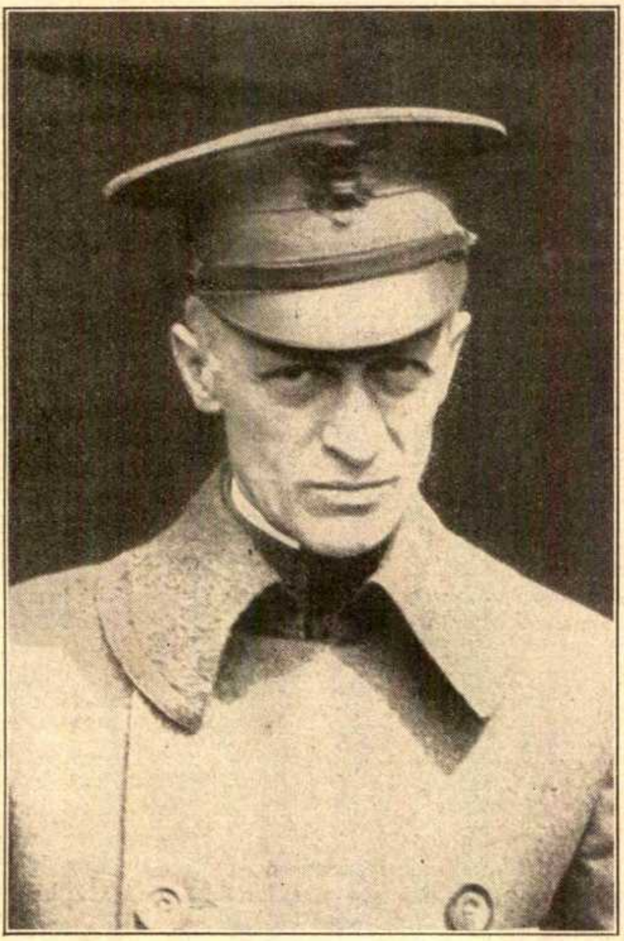
ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a meeting of the Royal Faculty of Physicians and Surgeons of Glasgow held on October 2, with Dr. John Henderson, President, in the chair, the following were admitted Fellows of Faculty: Anne Cunningham Aitkenhead, M.B., Ch.B., David Clowes Williams, M.B., Ch.B.

Obituary

HARVEY CUSHING, C.B., M.D.
Hon. F.R.C.P., F.R.C.S.

We record with deep regret the death at Newhaven, Connecticut, on October 7 of Professor Harvey Cushing, the great American surgeon who was a Foreign Member of the Royal Society, a Foreign Corresponding Member of the British Medical Association, and an Honorary Fellow of the Royal College of Physicians of London and the Royal College of Surgeons of England. Harvey Williams Cushing was born on April 8, 1869, at Cleveland, Ohio; his brother E. F. Cushing (1862–1911), professor of paediatrics, his father Henry Kirke Cushing (1827–1910), professor of obstetrics and gynaecology in the Western Reserve Medical School, his grandfather Erasmus Cushing (1802–93), who came to Cleveland from Massachusetts in 1835, and his great-grandfather David Cushing, jun. (1768–1814), were medical men. His mother's family—the Williamses—migrated before 1812 from Connecticut to Ohio to create the "Yale of the West." Brought up among the traditions of the Western Reserve it was thus not unnatural that he should graduate in Arts at Yale and during his busy life return to Cleveland in reminiscent mood on ceremonial occasions, among them the dedication of the new medical buildings of the Western Reserve University (1924) and the Allen Memorial Medical Library, Cleveland (1926).



Johns Hopkins Hospital

Like W. S. Thayer, educated medically at Boston (M.D.Harvard, 1895), and a resident at the Massachusetts General Hospital, Cushing followed him to the Johns Hopkins Hospital, Baltimore. Here he probably made the final decision between the career of a physician or a surgeon; this must have been difficult for the only man except King Edward VII, when Prince of Wales, to become in later life an honorary fellow of both the Royal College of Physicians of London and the Royal College of Surgeons of England. But in an address on "The Physician and the Surgeon" (1922) he took as his text the dictum of Lanfranchi (d. 1315) that "no one can be a good physician who has no idea of surgical operations, and a surgeon is nothing if ignorant of medicine." In the Hunterian Laboratory of experimental medicine at the Johns Hopkins he worked quietly for years at experimental surgery and pathology, becoming associate in surgery in 1899 and associate professor of surgery in the University 1903–12.

Neurological Surgery

In 1905 he decided to restrict his professional activities to neurological surgery, and in that year gave an address on "the special field of neurological surgery" at Cleveland, and wrote on "comparative surgery, a new development in the teaching of operative surgery." In 1912 he was appointed Moseley Professor of Surgery in Harvard University and surgeon-in-chief to the newly opened Peter Brent Brigham Hospital, Boston, Mass., where in the next twenty years (1912–32), perhaps the most actively productive period of his life, he built up a great school of neurosurgery. For his seventieth birthday L. Eisenhardt, J. F. Fulton, and M. E. Stanton prepared his bibliography for the Cushing Society; this showed that he had written three hundred and thirty papers, addresses, and reports, and that almost exactly the same number (327) of papers had been contributed from his clinics and laboratories by his pupils. In 1912 the first of his thirteen published books appeared, the great monograph *The Pituitary Body and its Disorders: Clinical States produced by Disorders of the Hypophysis Cerebri*. This was the stimulating foundation for the widespread research work on the pituitary, and led up to his syndrome of pituitary basophilism known as Cushing's syndrome (1932). His other professional works were mainly on various forms of cerebral and intracranial tumours.

War Service

In March, 1915, Cushing left Boston for France with the Harvard Unit to serve in the American Ambulance at Neuilly, and after working there and seeing the organizations of the French and the Royal Army Medical Corps returned to Boston. In March, 1917, he took a very active part in organizing the United States Army Base Hospital No. 5, and in May sailed again as its Director for France. He became an operating surgeon with the British Expeditionary Force, and in June, 1919, was transferred to the medical headquarters of the American Expeditionary Force as senior consultant in neurosurgery. In October, 1918, he became seriously ill with acute polyneuritis, but recovered sufficiently to reach England in the middle of January, 1919, and the United States on February 20. *From a Surgeon's Journal, 1915–1918*, stated to be edited anonymously, and not published until 1936, contained his diary of his arduous war service.

Cushing's Life of Osler

Early in 1920 Lady Osler asked Cushing to write the life of Sir William. This labour of love was completed in 1925 and published by the Clarendon Press at Oxford. One of the best medical biographies and, like Sir Rickman Godlee's *Lord Lister*, by a surgeon, it gave a wonderful picture of a great personality, and was described as "the happiest fusion of the objective and subjective that biographical art has ever turned out in our rich literature" (Arnold C. Klebs). It was remarkable for the absence of Cushing's name from the text and index. It was, however, mentioned that on the day the Oslers finally left Baltimore "someone unscrewed and took away the unpretentious 'Dr. Osler' door-plate." This relic, it may be added, afterwards reposed on Cushing's writing-desk.

The first four chiefs of the Johns Hopkins Hospital—Welch, Osler, Halsted, and Kelly—greatly influenced the generation they so successfully trained up to follow the Hopkins tradition which they created. Of their pupils many became famous, and particularly Cushing, who certainly resembled Osler in personality, mentality, generosity in giving help and credit to others, in power of work and of self-effacement. Like Osler, he died a few months after his seventieth birthday had been enthusiastically celebrated by his friends and pupils. He had the same keen interest in medical bibliography, history, and book collecting. As a writer he had a clear, concise, and allusive style; for instance, at the Lister Centenary celebrations at Edinburgh in 1927 he compared Abraham Lincoln and Lister "in their service to the proposition that all men are created equal. Lister freed man from the shackles of sepsis; Lincoln, a race from those of slavery."

Cushing deservedly received many honours in Europe as well as in America; for war services C.B.(Mil.) and the Legion of Honour; a Foreign Member of the Royal Society, twenty-one doctorates from universities, and many honorary memberships of scientific and medical societies. In 1913 he was selected to give the address in surgery entitled "Realignments in Greater Medicine: their Effect upon Surgery and the Influence of Surgery upon them," at the seventeenth and last International Congress of Medicine held in London. He was then 44 years of age; the reader of the address in medicine, on "Medical Prognosis: its Methods, its Evolution, its Limitations," was Professor A. Chauffard (1855–1932) of Paris, being fourteen years his senior.

When in 1932 Cushing's time at Boston came to an end he returned to Yale as Sterling Professor of Neurology (1933–7) and consulting neurologist to the New Haven Hospital, and on account of failing health gave up the Sterling chair to become director of studies in the history of medicine.

Humphry Rolleston.

Harvey Cushing at Home

Sir Arthur MacNalty sends the following account of "A Day with Dr. Harvey Cushing," written after his visit to the United States this year, and adds a personal tribute:

On June 26, 1939, I went by train from New York to New Haven, Connecticut, and proceeded to the New Haven Hospital, where I found Harvey Cushing working in his room. There he was, clad in a grey suit, with his clear-cut classical features like a Roman cameo, his figure as slight and upright as that of a young man, his keen eyes lit up and his face smiling a welcome to me. Papers and casebooks were on his desk, the shelves behind him were lined with books, surgeons and house-men in white coats and attentive secretaries formed his suite. With a few words of instruction he dismissed the suite and we sat down to talk. His serious illness two years ago had given his friends cause for considerable anxiety, and I was glad to find him in good health and as mentally alert as of yore. He had recently celebrated his seventieth birthday by bringing out a large book on *The Meningiomas*, in which he records the after-histories of his cases and his wealth of experience as the leading cerebral surgeon of the world to-day. He expressed his gratification at the Honorary Fellowship which the Royal College of Physicians had recently conferred upon him. "I never expected such an honour," he said with a twinkle in his eyes; "it makes me a sort of professional hermaphrodite, physician and surgeon too!"

He is now professor emeritus of Yale University and consulting neurologist to the New Haven Hospital, where he has rooms, laboratories, and full facilities for continuing his own neurological investigations and for directing and inspiring younger workers in the same field. Neither does the biographer of Osler forget his literary activities. He told me he was writing a bibliographical life of Vesalius on which he had been collecting material for forty years, the subject being originally suggested to him by Osler. After showing me his laboratories and the work on which he is engaged, Dr. Cushing introduced me to his colleague, Dr. Zimmerman, who described to me his research work on encephalitis lethargica. Dr. Cushing then took me to his delightful New England house with a wide veranda in front and approached like an English mansion by a carriage-drive. On the way we passed the Gothic grey stone buildings of Yale University set in green sward. Yale is very much the Oxford or Cambridge of the United States, and I was informed that in recent years the system of colleges has been introduced, which brings it even closer to the parent universities of England.

Dr. Cushing had invited four Yale professors, in whose work he knew I would be interested, to meet me at luncheon. These were: Dr. George Blumer, clinical professor of medicine; Dr. George H. Smith, professor of anatomy; Dr. Ira Hiscock of the public health department; Dr. Middleton C. Winternitz, professor of pathology. At luncheon we had a most interesting conversation which ranged over many subjects: Osler, Welch, the present condition of Johns Hopkins University, progress in public health in the United States, and advances in our knowledge of epidemic diseases of the central nervous system. Dr. Cushing showed me his vast library, which contains a number of rare editions of medical authors of the fourteenth, fifteenth, and sixteenth centuries. He possesses one of the most complete collections in the world of the works of Vesalius. We then left Dr. Cushing to take a siesta and the professors took me to the Medical University buildings to see something of the research work in progress there. I then returned to the New Haven Hospital and had the pleasure of a long talk with Dr. Cushing on public health work in the United States. Dr. Cushing strongly holds the view that social health legislation in the United States must be gradually built up, and that a revolutionary scheme would defeat its own objects and might antagonize the medical profession. Dr. Cushing with his wonted courtesy insisted on seeing me off by the evening train to New York.

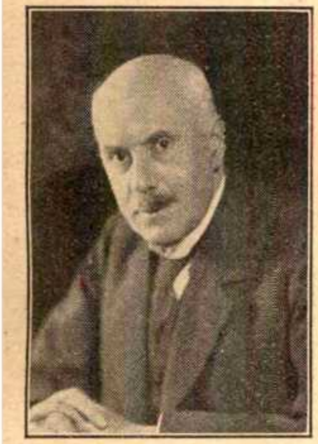
Now those hands which wielded pen and scalpel with equal skill are at rest and the great name of Harvey Cushing passes into history. A fortnight ago I received a last gift from him, the bibliography of his writings, prepared on the occasion of his seventieth birthday by the Harvey Cushing Society. Eighty-nine pages of close print are barely sufficient to record the work which he did for the advancement of cerebral surgery, of knowledge of the endocrines, and of neurology generally. His biography of Osler is a classic, the wonderful tribute of one leader to another. As my little sketch of that pleasant day at New Haven shows, Harvey Cushing was investigating and working up to the end. It was a full and glorious life, and we who loved and admired him will ever find joy in his remembrance.

[The photograph reproduced is by the "Topical" Press Agency, Ltd.]

JOHN DIXON COMRIE, M.A., B.Sc., M.D.

Physician to the Royal Infirmary, Lecturer on the History of Medicine in the University, and Vice-President of the Royal College of Physicians, Edinburgh

We regret to announce the death of Dr. John D. Comrie, on October 2, at his home in Manor Place, Edinburgh.



John Comrie was born at Peterhead, Aberdeenshire, where his father practised, on February 23, 1875. An only child and the son and grandson of medical men, it was not unnatural that medicine should become his calling. When his father retired he came to live in Edinburgh, and it was at George Watson's College and at the University of Edinburgh that Comrie received his undergraduate training, taking degrees in Arts, Science, and Medicine, the last with first-class honours. After holding appointments as resident physician and surgeon in Edinburgh and Glasgow he spent a year in London as clinical assistant with Sir David Ferrier at the National Hospital, Queen Square, and with Mr. Marcus Gunn at Moorfields. The following winter he devoted to pathology, working in the laboratory of Professor Virchow in Berlin and that of Professor Obersteiner in Vienna. Returning to Edinburgh in 1902, Comrie engaged for a time in general practice, but for many years past he had practised as a consulting physician. Among successive appointments which he held were those of clinical tutor, assistant pathologist, and assistant physician to the Royal Infirmary. In 1927 he was appointed a full physician, and at the time of his death he was the senior physician to this institution. For a period he was pathologist to Leith Hospital, and for several years he was physician to the Deaconess Hospital, Edinburgh. From 1921 onwards he delivered a course of lectures on the practice of medicine in the School of Medicine of the Royal Colleges. In 1909 he was appointed to the newly instituted lectureship on the history of medicine, a post which he filled with distinction up to the time of his death.

A man with an essentially academic outlook, Comrie had a variety of interests and activities. He was a prolific writer, publishing among other works a book on *Diet in Health and Sickness*. In 1912 he inaugurated, as general editor, the Edinburgh Series of Medical Textbooks, and a little more than a year ago he was appointed Editor of the *Edinburgh Medical Journal*. But it is especially as a learned medical historian, for in this province he had a wide reputation, that Comrie's name will live in the annals of the Edinburgh School. Here his familiarity with the dead languages served him in good stead. *A History of Scottish Medicine*, a second edition of which appeared in two volumes, was a contribution of special importance.

Comrie was an enthusiastic Territorial. During the great war he was in charge of wards at the 2nd Scottish General Hospital; later he served in France as lieutenant-colonel of a large medical division in a general hospital; and in 1919 he accompanied the British Expeditionary Force to Northern Russia as consulting physician.

The British Medical Association had in Comrie a keen supporter. He presided over the Section of the History of Medicine at the Annual Meetings in 1927 and 1930, and for many years he had been an active worker both on the Council of the Association and on the Journal Committee. At the time of his death he was chairman of the Scottish Committee, the Scottish Central War Committee, and the Consultants and Specialists Group Committee for Scotland.

There was something very likeable about John D. Comrie. His figure was imposing, his manner unassuming, somewhat hesitating, almost prim. He had a kindly outlook and was a friendly fellow. All who knew him will recall the characteristic twinkle so often in his eye, an accompaniment of a very pawky humour. He was a *persona grata* with his colleagues not only in *res medica* but at the festive board. Dogged at times by indifferent health, the way in which he stood up to his disability and the handicap which it imposed evoked their admiration.

To his widow, the daughter of the late Mr. Archibald Hewat, and to his three daughters we offer our sympathy.

E. B.

[The photograph reproduced is by Elliott and Fry, Ltd.]

Dr. Ganesh Sawh writes: As a former President of the Edinburgh West Indian Students' Society, I wish to place on record the sincere regret that will be felt by all West Indian graduates who, during their Edinburgh career, came into contact with the late Dr. John D. Comrie. He understood the problems of students from the far-off Colonies, and was always kind and sympathetic towards them. As a lecturer in systematic medicine and a teacher of clinical medicine his fame was well known to all West Indians, and they would flock to attend his lectures and clinics. Within my knowledge no West Indian student would have considered his medical education complete had he not at some time attended the clinics of the late Dr. Comrie. He was often acclaimed by them as one of the best clinical teachers of their time. Dr. Comrie has set an example which it will be difficult for others to follow. The excellence of his teaching will, however, bear fruit in the gardens of the West Indies, where many Edinburgh graduates will reflect on the soundness of their early clinical training under a master in the art of teaching.

We regret to announce the death in his sixtieth year of **Dr. Charles Michael Roberts** on September 2. He was born in India and came at an early age to England, where he was brought up. Roberts received his medical education at St. Thomas's Hospital, where he obtained the first entrance scholarship in natural science. Qualifying M.B. in 1904 and B.S. in 1906, he entered the Indian Medical Service in 1907, but left it in 1908 to buy a practice in Woking. He took up *x*-ray work shortly before the last war, joining the R.A.M.C. in 1915, and was with various hospitals in France and Salonika until 1919. He became a clinical and later a chief assistant in the *x*-ray department at St. Bartholomew's Hospital, a post he eventually gave up on account of failing health. He was supervisor to the British Red Cross Society Curative Post, Woking, and was also radiologist to the Victoria Hospital, Woking. His kindly, cheery personality will be very much missed both by his colleagues in London and Woking and by those who knew him well. He leaves a widow, three sons, and a daughter.

Dr. **John McFarlane William Pollard** died suddenly at Cheltenham on September 26. He was a student at Guy's Hospital, and obtained the D.P.H. of the English Conjoint Board in 1912; before this he had graduated M.B., B.S.Lond. and taken the M.D. degree in tropical medicine. After serving as resident medical officer to the Central London Ophthalmic Hospital he took the certificate of the London School of Tropical Medicine and then joined the Nigerian Medical Service, of which he became assistant director. Dr. Pollard was elected a member of the British Medical Association in 1907, and was a Fellow of the Society of Tropical Medicine and Hygiene. Since his retirement from the

Nigerian Medical Service in 1928 he had held the post of honorary refractionist to the Cheltenham Eye, Ear, Nose, and Throat Hospital.

Dr. Walter Edward Turner died on September 28 in his sixty-sixth year at Eton House, Hanging Langford, near Salisbury. He studied medicine at St. Mary's Hospital, and took the M.R.C.S. and L.R.C.P. diplomas in 1900. Dr. Turner was for many years medical superintendent of the Central Middlesex County Hospital, and in 1932–3 served as chairman of the Willesden Division of the British Medical Association. He retired from his post at the Central Middlesex County Hospital on account of ill-health at the end of 1935, and was succeeded by Dr. H. Carter.

Dr. Margaret Scoresby-Jackson, elder daughter of the late R. E. Scoresby-Jackson, M.D., F.R.S.Ed., died on September 29 at Worthing. She studied for the profession at the London School of Medicine for Women, at University College Hospital, and at the University of Durham College of Medicine, Newcastle-upon-Tyne, and graduated M.B., B.S. at Durham in 1924, proceeding to the M.D. two years later. She had been clinical assistant in the out-patient department at the Bethlem Royal Hospital, with care of mental defective patients, and clinical assistant in the neurological department at Guy's Hospital, and contributed to the *Journal of Mental Science* in 1927 a paper on the fragility of the red blood cells in mental disease. Dr. Scoresby-Jackson was a member of the British Medical Association and the Medical Women's Federation, and a Fellow of the Royal Society of Medicine.

Dr. Francis John Russell died at his home in Lee Road, Blackheath, on September 30. A student of the London Hospital he qualified M.R.C.S., L.R.C.P. in 1905, and was a member of the British Medical Association for most of his professional life. At the close of 1937 he was appointed emergency officer for making the arrangements for war-time service among the medical men of Greenwich and Deptford, and did a considerable amount of clerical and other work in this respect early last year.

Dr. John Allison, who died suddenly on October 1, aged 76, at Kettering, Northants, had been a member of the British Medical Association for forty-seven years, and in 1899 was president of the South Midland Branch. Educated at the University of Edinburgh, he took the M.B. and C.M. degrees in 1886, and proceeded M.D. in 1895; in the following year he obtained the diploma of F.R.C.S.Ed., and in 1900 the D.P.H. of the English Conjoint Board. After graduating he served as resident surgeon at the Edinburgh Royal Infirmary, and became a Fellow of the Obstetrical Society of Edinburgh. At Kettering he held for many years the post of medical officer of health to the urban district council and honorary surgeon to the Kettering General Hospital. He held a commission in the R.A.M.C.(T.), and attained the rank of lieutenant-colonel.

The death took place on October 1 at Surbiton of Dr. George Frederick Cooper, formerly of Longcroft, Loughton, at the age of 78. He studied medicine at St. Thomas's Hospital, and after taking the M.R.C.S. and L.R.C.P. diplomas graduated M.B., B.S.Lond., with a gold medal, in 1884. At St. Thomas's he served as house-surgeon and resident accoucheur before making his home in Chile, where he obtained the M.D. degree at Santiago in 1886 and became medical officer to Pisagua Hospital and the Nitrate Railways, Tarapaca. Dr. Cooper joined the British Medical Association in 1885 and remained a member up to the time of his death.

The following well-known foreign medical men have died: Dr. Albert Brault, honorary physician to the Paris hospitals and member of the Académie de Médecine, aged 88; Dr. Valentin Cantinieaux, the Belgian urologist; and Dr. Francis Hoeffer McMechan, an anaesthetist of Cincinnati, honorary member of the Section of Anaesthetics of the Royal Society of Medicine, and editor of several journals of anaesthesia.

Medical Notes in Parliament

On October 9 Mr. Oliver Stanley presented a Bill to prevent the price of goods of such descriptions as might be specified by the Board of Trade being raised above a basic price by more than an amount referable to increases in certain specified expenses. The Bill was read a first time.

Health of the Evacuated Population

Dr. Summerskill asked on October 5 whether, in determining a suitable reception area for children in country districts, investigations were made concerning the cleanliness and safety of the local milk supply. Dr. Elliot replied that the primary considerations in determining the reception areas had to be those of transport and accommodation. Such consideration as was possible was given to other relevant factors, including any abnormal risks from infectious disease from food and water supplies, as ascertained from public health and other reports.

Dr. Elliot told Sir Waldron Smithers on October 5 that his attention had been called to the condition of evacuated children suffering from various diseases, including whooping-cough, impetigo, scarlet fever, and verminous heads. He had drawn the attention of local authorities to the matter in a circular recently issued on public health services in the reception areas. Arrangements were being made for the medical inspection in the evacuating areas of the smaller numbers of school children now being moved under the Government scheme.

In answer to Sir Charles Cayzer, Dr. Elliot said he had instructed evacuating local authorities before dispatching any further parties to the reception areas to carry out a medical inspection and, where necessary, the efficient treatment of all children to be included in the parties.

Mr. Butcher asked on October 5 whether, in order to alleviate hardship and suffering to unaccompanied children coming from evacuation areas, the Board of Education would authorize medical officers of health in reception areas to provide dental, orthopaedic, and ophthalmic treatment in cases of special need without the consent of the parents. Mr. Kenneth Lindsay answered that as regards dental treatment the Board was advised that where there was evidence that the child had received such treatment in the past it might be assumed that the parent would agree to further treatment, but that the administration of a general anaesthetic should, if at all possible, be avoided unless the consent of the parent had been obtained. In other dental cases treatment should be limited to emergency treatment. Cases requiring immediate orthopaedic or ophthalmic treatment were likely to be rare, and except in such cases the consent of the parent should be obtained.

Dr. Elliot will consider whether in special circumstances, such as when a doctor certifies that it is advisable, facilities can be arranged to enable parents to visit their children in reception areas in cases of illness.

Doctors and First-aid Posts

Sir Francis Fremantle asked Dr. Elliot on October 4 if his attention had been drawn to the absence of arrangements for the continuous medical supervision of first-aid posts and for the continued training of the first-aid parties attached to such posts; and what action he proposed to take. Dr. Elliot replied that arrangements were made before the outbreak of war whereby a medical officer attached to each first-aid post undertook for an annual fee to conduct the collective training of the personnel of the post under the general supervision of the medical officer of health. These arrangements were still in operation.

Sir Francis Fremantle contended that what was now required called for an infinitely greater amount of work than in peace. He said medical officers could not attend without further remuneration. Dr. ELLIOT remarked that he would later in the week receive some doctors who took part in the organization of first-aid posts.

Doctors released from E.M.S.

Sir FRANCIS FREMANTLE inquired on October 4 whether Dr. Elliot would arrange for medical practitioners now engaged for duty in hospitals wholly or partially empty to be released for civil practice with liability to immediate recall in case of need. Dr. ELLIOT replied that he would do so. Letters had been sent to a number of whole-time members of the Emergency Medical Service offering to release them for civil practice under certain conditions.

Increased Drug Prices

Mr. DAVID ADAMS asserted on October 5 that since the outbreak of war vegetable drugs, essential oils, and medicinal chemicals had doubled and even trebled in price, and that certain of these were being withheld altogether from the market. Mr. OLIVER STANLEY replied that he found there had been substantial increases in the price of a number of goods of this class. Inquiries were being actively pursued, and discussions had been arranged with representatives of the wholesale and retail drug trades.

Proprietary Medicines: Postponement

On October 5 Dr. ELLIOT recalled that Sir John Simon announced on August 4 that it was intended to appoint a committee to examine both the control and the taxation aspects of the proprietary medicines question. Dr. Elliot said that in view of the outbreak of war the appointment of the committee had been postponed. The question of legislation must remain in abeyance.

Paying for Billeting

It was announced in Parliament last week that a proportion of the cost of billeting evacuated school children is to be recovered from parents. The average cost to the Government at present is roughly 9s. a week for each child. Parents or other persons responsible for evacuated children will be asked to pay the full charge of 9s. if they can afford to do so, but the Government recognizes that in many cases there will not be a corresponding relief to the family budget, and they have accordingly fixed a contribution of 6s. a week as the standard charge. Parents who cannot afford to pay as much as 6s. will pay a smaller amount appropriate to their means. The date on which liability to pay starts is fixed for October 28.

Excess Profits Tax and the Professions

In Committee of the House of Commons on the Finance Bill on October 5 Sir HENRY MORRIS-JONES opened a discussion on the clause imposing an Excess Profits Tax. He said there was no reason why any individuals who got an accretion of their income during the war should escape this additional taxation.

Sir JOHN SIMON said there was attractiveness in the argument that this tax should include the professions, but if it were applied to all individuals it would be a third general tax. A person starting in the practice of a profession might find his income at the beginning was materially less than it would become in the course of years of successful practice. There was no justification for treating that man as having made excess profits.

The clause was agreed to and the committee stage was completed.

Institutional Treatment of Tuberculosis

Captain PLUGGE asked what arrangements were being made to continue the treatment of consumptives who had been moved from the institutions in which they were receiving treatment. Dr. ELLIOT replied on October 9 that any consumptive requiring institutional treatment should receive it. Accommodation was available for such treatment. He was investigating the question of releasing certain hospitals and sanatoria from the Emergency Scheme altogether.

School-leaving Age

In the House of Commons on October 9 the Education (Emergency) Bill, which has passed the House of Lords, was read a second time. Mr. KENNETH LINDSAY, who moved the second reading, said that the Bill suspended the raising of the school age from 14 to 15. This would otherwise have taken effect on September 1 last under the Education Act of 1936. In all the evacuation areas and most of the neutral areas schools were still closed. In the reception areas, where the schools were working a double-shift system or some other expedient, there was very great difficulty in providing the sort of education visualized between the ages of 11 and 15 when the legislation was passed. The building operations to meet the requirements of reorganization were held up by the prior claims of the Services and supply departments, and the procedure of granting exemptions also could not possibly be worked at present. After the war the Government would review the whole position. This was a Bill for suspension, and not for repeal.

If compulsory schooling was to finish for the time being at 14, they had done what they could to counteract what was admittedly a step back by setting up a new body called the National Youth Committee, whose declared object was to safeguard the educational and recreational interests of young workers between 14 and 18. That was being done immediately, and might help to remedy some of the conditions, particularly in the evacuation areas. At one place in Surrey the whole dietary of a group of evacuated children had been planned, and included fruit and vegetables on a scale which the children had never seen before. The Department proposed to exploit this situation to the full and to make the most of this period.

The Education (Emergency) (Scotland) Bill, which postpones the raising of the school age in Scotland, was read a second time on the same date.

Milk Grants.—On October 2 Sir REGINALD DORMAN-SMITH informed Brigadier-General Clifton Brown that the Milk Industry Act, 1939, which provided for the payment of quality premiums in respect of tuberculin tested and accredited milk and milk from attested herds, remained in force, and the premiums would accordingly continue to be paid for those categories of milk by the Milk Marketing Board. The premiums were independent of the bonus payable under the Tuberculosis (Attested Herds) Scheme.

Medical Attention for Dependants of Men on Service.—On October 3 Dr. ELLIOT told Mr. Dobbie that medical assistance was available at the cost of Service funds for the wives and families of regular soldiers and certain classes of reservists if they were living at or near a Service station. A similar privilege existed in the R.A.F. Apart from these special provisions the medical services provided for the population generally were, of course, available wherever and whenever they were required.

Dietary of School Children.—Mr. KENNETH LINDSAY remarked on October 5 that there was still scope for considerable improvement in the meals provided for necessitous undernourished school children. It was not the case that the normal present diet consisted of meat, potatoes, and dried vegetables. Under normal conditions fresh fruit was recommended as an essential when planning the dietaries. Local education authorities were advised that each midday meal should include either fresh fruit or fresh vegetables. The inclusion of dishes made with cheese was also recommended.

Gas-and-oxygen for War Wounds.—On October 10 Dr. SUMMERSKILL asked the Secretary of State for War if he would advise the medical staffs of military hospitals that whenever possible they should use gas-and-oxygen analgesia in the dressing of war wounds of a severe character. Mr. HORE-BELISHA replied that he was advised that the medical staff of military hospitals were fully aware of the value of this treatment, and would use it in all appropriate cases.

Inspection of Factories in War Time.—Sir JOHN ANDERSON said on October 5 that the work of the factory inspectors generally was necessarily abnormal in many respects at the present time, though still closely related to their normal function of watching and advising on the safety, health, and welfare of factory employees. Arrangements were made early in the year for the inspectorate to devote much of their time to assist in the launching of the provisions of the Civil Defence Act as to air raid shelter in factories. It was hoped that this work would shortly be completed. The strength of the inspectorate was being kept under review, and some additional appointments were being made.

Notes in Brief

Through the Swiss Minister in London the German Government has given an assurance that it will abide by the Geneva Protocol of 1925 prohibiting the use of gas and bacteriological methods of war provided that the British Government will also observe the Protocol.

No special provision has been made to attach to the staff of the Ministry of Information persons connected with the medical press. The Minister of Health will be responsible for all publicity necessitated by the work of his Department.

Medical News

As from Monday, October 16, 1939, the Library of the British Medical Association will be open from 9.0 a.m. to 5.0 p.m. (1.0 p.m. Saturday) until further notice.

The Governing Body of the British Postgraduate School at Hammersmith has decided to carry on postgraduate instruction for the present.

The West End Hospital for Nervous Diseases, at its out-patient department (73, Welbeck Street, W.), continues to provide daily clinics at 2 p.m. (Saturdays excepted). The in-patient department (Regent's Park) has been reopened to 50 per cent. of its normal peace-time capacity.

Professor Hartmann, the president, has decided that the Academy of Medicine of Paris will meet every fortnight during the war.

The Medical Benevolent Society for the East and North Ridings of the County of York (including the City of York) held its thirty-first annual meeting on September 27 at the rooms of the York Medical Society. The reports of the honorary treasurer and the honorary secretary were adopted, and the grants sanctioned in previous years were again agreed upon, and in one case increased. Votes of thanks were passed to Dr. C. H. Milburn, the retiring president; to Dr. C. Howard Jackman, the retiring honorary secretary; and to Mr. Herbert Locking, F.C.A. New members were elected and the following officers appointed: president, Mr. B. G. Sandys-Belas, Middlesbrough; president-elect, Dr. F. C. Eve, Hull; vice-president, Dr. G. F. Longbottom, Middlesbrough; honorary treasurer, Dr. D. Matheson Mackay, Hull; honorary secretary, Dr. W. W. A. Kelly, York; honorary assistant secretary, Dr. J. D. Burrows, York.

The annual dinner of the West Riding of Yorkshire Edinburgh Graduates Association will not be held this year owing to the war.

The issue for September 23–30 of *Paris Médical,* which is now appearing fortnightly instead of weekly, is devoted to pharmacology, and contains a review of pharmacology in 1939 by Professor M. Tiffeneau.

Poliomyelitis at the present time is on the decline in Sweden: 3,000 cases were notified in 1936, 1,931 in 1937, 1,450 in 1938, and only 69 in the first quarter of 1939, as compared with 155 for the same period of 1938. The disease is more prevalent in the country than in the towns. The age distribution has changed. In 1936 the group most affected was not from 0–5 but from 10–15.

The Bradford Hospital and Convalescent Fund has been compelled to suspend its many winter activities for the time being. Nearly all the usual committee meetings have been postponed, but members are devoting their energies to gaining financial support for the contributory scheme in view of the probable drying up of many sources of ordinary income. The executive committee at its last meeting decided that dependants of contributors who have joined the Royal Navy, the Army, or the R.A.F. should have all the privileges of the scheme without payment of contributions for six months after the contributor's enlistment. After six months those dependants who wish to continue membership may enrol at any depot in the city without observing the usual three months' waiting period.

EPIDEMIOLOGICAL NOTES

Infectious Diseases and Evacuation

Incidence of Infection.—The effect upon the incidence and distribution of the acute infectious diseases of the evacuation of susceptible subjects from densely populated areas to rural districts is becoming more evident as the weeks pass. Little can be said with certainty at this stage on total incidence, as the observed increases in respect of the two principal notifiable diseases—diphtheria and scarlet fever—are no higher than might be expected when schools reopen and the winter months approach. Nor should too much importance be attached to the low incidence of these diseases compared with 1938, since differences as great between consecutive years are by no means uncommon.

The figures for large towns such as London, Manchester, Birmingham, and Liverpool for the week under review show that the principal epidemic diseases have fallen to approximately a quarter of their expected level, presumably on account of the evacuation.

Certain diseases such as enteric and cerebrospinal fevers, in which the attack rate among adults is relatively high, have not undergone any great change; but we may observe that the notifications of enteric for the past four weeks have been 77, 77, 77, and 71; the figures for the corresponding weeks last year were 32, 36, 45, and 27. The rates for puerperal pyrexia in the large towns have also fallen, but not equally, perhaps because of the varying success of particular evacuation schemes.

Susceptibles in Reception Areas.—Mass evacuation has brought in its train problems with which public health authorities in reception areas are only now being faced. Avoidance of spread of infection among the relatively susceptible subjects in rural areas has been sought by providing separate schools or by staggering the hours of school attendance, but there is a limit to the application of these measures, especially with the coming of winter. More success may be anticipated from an intensive immunization campaign, chiefly against diphtheria and to a lesser extent against scarlet fever and whooping-cough. The experience of South Shields may be cited in this connexion. In 1938 there were 598 cases of diphtheria, more than the total for the preceding ten years, with 61 deaths, while in the first nine months of 1939, when immunization was adopted, deaths have fallen to 32 and cases to 409, a large proportion of which were carriers. Among 13,000 children adequately immunized cases have been few and mild and no deaths have been recorded.

Problems of Isolation.—The insufficiency of isolation accommodation in reception areas has afforded opportunities of assessing the merits of home nursing of cases of infectious diseases. The absence of ordinary hygiene and cleanliness in many groups of evacuees, among whom impetigo, scabies, and pediculosis have been rife, has necessitated the provision of additional isolation accommodation in many districts. Local authorities are naturally averse to extensive financial commitments, as the duration and intensity of evacuation remain uncertain.

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INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended September 23, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (*a*) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	10	1	10	—	—	18	—	12	—	1
Deaths		—	1				1	1		
Diphtheria	889	30	163	51	21	1,198	152	201	56	25
Deaths	18	—	4	3	3	23	4	4	2	—
Dysentery	22	1	23	—	—	27	2	30	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	6	1	2		—	2	—	—		—
Deaths		2	—				1	1		
Enteric (typhoid and paratyphoid) fever	71	6	9	11	2	27	2	3	7	1
Deaths	1	1	—	—	—	—	—	—	—	—
Erysipelas			66	4	4			72	2	6
Deaths		—	—				—			
Infective enteritis or diarrhoea under 2 years										
Deaths	54	4	23	14	9	41	10	10	7	7
Measles			6		1			18		—
Deaths	—	—	—	—	—	2	1	—	—	—
Ophthalmia neonatorum	63	2	16		—	88	4	16		4
Deaths										
Pneumonia, influenzal*	300	12	2		4	540	42	1		—
Deaths (from influenza)	4	1	2	—	—	23	3	2	—	—
Pneumonia, primary			78	3				134	10	
Deaths		1		1	3		7		7	6
Polio-encephalitis, acute	2	1				3	—			
Deaths		—					—			
Poliomyelitis, acute	38	2	3	—	—	60	3	10	—	—
Deaths		—	—				—	—		
Puerperal fever	3	3	12	2	—	2	2	3	3	—
Deaths		1†					—			
Puerperal pyrexia	153	3	16		1	157	21	14		1
Deaths										
Relapsing fever	1	—			—	—	—			—
Deaths										
Scarlet fever	1,146	37	242	42	78	1,768	160	373	59	73
Deaths	2	—	1	—	1	1	1	2	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough			24		3			125		9
Deaths	12	3	1	2	—	6	3	2	2	1
Deaths (0-1 year)	274	33	63	24	17	269	50	69	27	20
Infant mortality rate (per 1,000 live births)						45	41			
Deaths (excluding stillbirths)	4,002	588	549	158	125	4,057	781	552	174	134
Annual death rate (per 1,000 persons living)			11.1	10.6	11.0	10.0	9.9	11.2	11.8	11.9
Live births	6,054	901	804	328	187	6,311	1,158	847	348	235
Annual rate per 1,000 persons living			16.3	22.1	16.4	15.5	14.7	17.3	23.6	20.8
Stillbirths	270	19	30			284	44			
Rate per 1,000 total births (including stillborn)			36			43	37			

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* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Death from puerperal sepsis

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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EDITOR OF THE *BRITISH MEDICAL JOURNAL, Aitiology Westcent, London.*

SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the Office of the Cumann Dochtúirí na h-Éireann (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin;* telephone 62550 Dublin.)

QUERIES AND ANSWERS

Dermatological Out-patients

Dr. W. GRIFFITH writes in reply to Dr. P. Farrell's question (October 7, p. 752): St. John's Hospital for Diseases of the Skin, 5, Lisle Street, Leicester Square, which had to suspend its services for A.R.P. purposes, has now resumed its normal activities. Out-patients are seen daily at 2 p.m., except Saturdays, and the in-patient department has been reopened.

The Secretary of St. John's Hospital informs us that the out-patient department is open daily from Mondays to Fridays at 1.30 to 3.30 p.m., and that patients who can afford to do so are expected to contribute towards their consultation, treatment, etc., according to their means.

Income Tax

Appointment—Board and Lodging

"C. H." asks what is the basis of liability in the case of an appointment "at so much per year plus emoluments—for example, board or part board with rooms and other perquisites . . . not payable in cash."

⁂ Emoluments not receivable in cash are not liable to assessment unless they are capable of being converted into cash—as, for instance, in the case of a free residence which the employee is permitted to let for a rent. This general principle was laid down many years ago in the leading case of Tennant *v.* Smith. If, however, the terms of the appointment are such that the employee is entitled to a stated salary which is subject to deductions for board, lodging, etc., then the whole salary—and not that amount less the deductions—is assessable to tax.

LETTERS, NOTES, ETC.

Hallucinations

Dr. DORIS ODLUM (London, W.1) writes: The articles on hallucinations by Dr. P. K. McCowan and Dr. Macdonald Critchley in your issue of September 23 recalled two hallucinatory experiences that occurred to me some years ago. I have never met anyone who has had a similar experience, so I assume it to be unusual. At the age of 16 I went to hear Elgar's *Apostles* performed at the Three Choirs Festival at Worcester Cathedral. It was a very exciting experience, and I was in a somewhat "exaltée" emotional state after it. That night I heard the whole oratorio over again in a kind of twilight state which was not like a normal sleep. The reproduction was absolutely accurate—orchestral, solo, and chorus parts were exactly as they were performed the morning previously. About two years later I had a similar experience after my first visit to the opera in Paris to hear *Tannhäuser.* The whole opera passed through my mind exactly as I had heard it that evening. On waking I could not recall anything but one or two of the leading themes. I am fond of music but not especially musical, and usually only recall a few phrases of anything I hear. I should be interested to know if others have experienced or heard of a similar phenomenon.

Evacuated Children

Dr. ARTHUR PAIN (Thorney, Peterborough) writes: I should like to draw your attention to a matter concerning evacuated children. We are going to be paid for the extra work that these children entail. We have over 200 children in our village. At least thirty of them are suffering from impetigo; this means a huge amount of work for our district nurse, and they are seeking her advice on many matters. Our nursing association only just pays its way, and is not in a position to give extra remuneration. I think that some means should be found to give these nurses some additional remuneration for the extra and useful work they are doing.

Dangerous Drugs in the United Kingdom

The annual report to the League of Nations of Great Britain and Northern Ireland for the year 1938 on traffic in opium and other dangerous drugs follows on lines which have become almost stereotyped—no new laws or regulations, no administrative changes, and no difficulties in effectuating the International Conventions of 1912 to 1931; no opium, coca, or Indian hemp are cultivated here, and the manufacture of morphine, heroin, codeine, and dionine is restricted to two firms and that of cocaine to one. The prevalence of addiction in the United Kingdom is repudiated, only 519 persons—273 women and 246 men—are known to the central office as addicts; and morphine is the drug most favoured, that of heroin being a bad second. Of the 519 addicts, 134 are reported to be medical men, five pharmacists, two dentists, and two veterinary surgeons. Prepared opium—that is, for smoking—which is widely used in the Far East and in some of our Colonies, is totally prohibited here. Nearly 12,000 ounces of British-made morphine were exported in 1938, the largest consignments being to New South Wales, Canada, South Africa, and India. There were fifty-nine prosecutions during 1938 resulting in forty convictions: twenty-three were punished by fine, sixteen by imprisonment, and one by penal servitude.

Position of War Blinded

"If war should come there will be many cases of blindness caused by hostile activities, but we have taken all steps possible to deal with the situation as it arises." These words appear in the seventieth annual report of the National Institute for the Blind, 224, Great Portland Street, London, W.1. The position of newly blinded persons—whether members of the fighting services, police, or private individuals—is far different from that which existed in 1914. Since then there has come into being an important scheme of co-ordination which has brought about an advancement probably greater than in any other branch of welfare work. To-day, any person losing his sight becomes straightway the responsibility of his local authority and all interested voluntary agencies, all of which work in close co-operation with the National Institute. Their common aim is the welfare of the sightless; and the Institute has opened its doors widely to all who can usefully co-operate to that end. Its council of eighty members represents the bulk of official and voluntary interest in our blind population. At the time of the outbreak of war this vast co-operative movement was carrying forward its humanitarian work in an ever-widening field, and the work is not to be allowed to slow down. During war the needs of the blind are greater than at any other time.

Economy of Coal Gas

Householders and others faced with new fuel problems will find useful three new publications of the British Commercial Gas Association, 1, Grosvenor Place, S.W.1. One is a "Weekly Record Card" on which can be kept a simple account of the amount of gas used each week, thus checking quarterly consumption. The card is provided with metal tabs for easy hanging up. Another card, "Don't Waste the Gas," gives fuel and food economy hints as well as instructions for meter reading. A pamphlet, "How Gas Rationing affects You" brings the Government rationing regulations down to terms easy to understand.

BRITISH MEDICAL JOURNAL

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TREATMENT OF CLOSED FRACTURES OF RADIUS AND ULNA*

BY

St. J. D. BUXTON, M.B., B.S., F.R.C.S.

Senior Orthopaedic Surgeon to King's College Hospital

It seems logical to adopt a standard form of treatment for certain fractures, if such is followed by a normal and lasting function, and is achieved in as short a time as possible. Axis and skeletal traction are considered up to date in the treatment of fractures. In forearm fractures my experience in their use is small and is never likely to be greatly increased, as other methods appear preferable. It is my intention to lay stress on the appreciation of the anatomical relationship of the radius and ulna at the superior and inferior radio-ulnar joints when fractures of the forearm are treated.

In the review of nearly 400 cases of forearm fractures it has been interesting to study the length of time each case has been under treatment. To make this possible the cases reported are only those treated from start to finish in one institution. Cases treated in nursing homes and other hospitals and those referred after some treatment—a considerable number—are excluded. This method of investigation has advantages in that the work has been in one clinic and the immediate setting has been carried out, in the greater number of cases during a five-year period, by casualty officers and orthopaedic house-surgeons, who show the utmost keenness and are severely critical of the success of their work, but are in no sense of the word experienced until it is time for them to pass to other appointments. Hence methods are advocated which are considered the simplest and seldom necessitate the admission of the patient to hospital: further manipulative or operative methods are employed only when they fail. Of 374 fractures it is found that twenty-eight were treated by open operation (7.4 per cent.). This low figure is accounted for by the large number of greenstick fractures in the series, for 75 per cent. of the fractures occurred in patients under the age of 20.

It is obvious that hospitals in industrial areas have in their clinics a far greater proportion of closed forearm fractures in adults than occur in this series, and my own experience is enlarged by accidents seen elsewhere. However, the detail of the treatment of the common injury, simple as it may appear, is worthy of consideration.

Group I—Bamboo and Greenstick Fractures with Little or No Displacement

After *x*-ray examination a plaster is applied, usually no anaesthetic being required. Records show that some of the slight injuries were treated on Carr's splint. A child is safer at school with the plaster on, and seldom does a parent meddle with it. The type of plaster employed is standardized for all the fractures under discussion.

	No. of Cases	Upper Third	Middle Third	Lower Third	Average Time Under All Treatment (Weeks)	Longest Time Any One Case Under Treatment (Weeks)
Radius and ulna	31	0	9	22	6.2	12
Radius ..	58	0	5	53	5.8	9
Ulna.. ...	4	1	2	1	6.7	10
Group as a whole	93	1	16	76	6.2	12

METHOD OF APPLYING PLASTER-OF-PARIS BANDAGE

The elbow is bent to a right-angle, and the forearm supinated and wrist slightly dorsiflexed. A thin slab of plaster is applied to the back of the arm and extensor surface of the forearm, extending from the lower border of the axilla to the metacarpal necks. This fits accurately on to the skin, and by two lateral cuts is made to fold round the elbow, coming forwards just over the epicondyles. It should cover slightly more than the posterior half of the skin area of the limb. A piece of wool is placed in front of the elbow. A flannel or plaster wool bandage is applied round hand, forearm, and arm to secure the plaster to the skin and to act as padding for the flexor surface of the forearm and antecubital fossa. A plaster bandage is wound round the limb from metacarpal necks to lower axillary border. This is never pulled tight, but folded to and fro and moulded in. The most distal turn should be round the neck and head of the metacarpal of the index finger and not in the apex of the web between thumb and index finger. A second bandage similarly applied may be required. During the moulding process an attempt should be made to produce a slight furrow along the front and back of the forearm in the line of the space between radius and ulna, but the inclusion of a piece of wood in the plaster to serve this purpose is unnecessary.

When the plaster extends only to "just above the elbow" some movement will take place at that joint, so that the plaster will cut in at the back of the arm and in front at the fold of the joint.

The patient is instructed to move the shoulder, fingers, and thumb straight away, and in some cases is advised to attend the massage department for assistance. Swelling of the hand may result from the injury itself or a plaster splint applied too tightly or incorrectly. Flexion contracture of the fingers may be due to haemorrhage in the forearm muscles, too tight a plaster, or the beginning of Volkmann's ischaemic contracture.

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* Read in the Section of Orthopaedics and Fractures at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

Group II—Greenstick Fractures with Angulation of One or Both Bones, which were Treated by Closed Methods

	No. of Cases	Upper Third	Middle Third	Lower Third	Average Time Under All Treatment (Weeks)	Longest Time Any One Case Under Treatment (Weeks)
Radius and ulna	114	11	64	39	8.6	16
Radius ..	44	1	11	32	7	11
Ulna.. ..	6	1	3	2	7.7	11
Group as a whole	164	13	78	73	7.8	16

When any angulation is present the child is anaesthetized and the fracture is completed, so that the forearm bones can be fixed in plaster in anatomical alignment. If this is not carried out deformity will follow which may or may not straighten out subsequently. If one bone only is affected the supination-pronation range of movement may be limited for some time and the other bone may bow as it grows. The completion of the fracture is simple if carried out over a rubber-padded wedge of wood. At first there is a fear of doing damage or of causing displacement, but it is quickly overcome. When one bone is angled in the upper third and the other two or three inches lower down, the forearm should be placed obliquely over the wedge. Reference will be made to re-fractures in children later; because of these, six weeks' complete fixation and a week in the posterior half of the plaster is considered necessary.

Group III—Fractures Other than Greenstick, which Required no Reduction, or in which Reduction was Contraindicated

	No. of Cases	Upper Third	Middle Third	Lower Third	Average Time Under all Treatment (Weeks)	Longest Time Any One Case Under Treatment (Weeks)
Radius and ulna	5	0	3	2	9.5	20
Radius ..	10	0	3	7	8.4	19
Ulna.. ..	14	2	6	6	14.8	20
Group as a whole	29	2	12	15	10.9	20

The injuries recorded in this group have been treated on similar lines. The patient usually reaches hospital wearing a first-aid appliance with the forearm pronated. Manipulation into full supination is painful, so that an anaesthetic is necessary for the application of the plaster. The fractures of interest in Group III are those of the ulna alone. If there is a crack only, or a fracture with one or more loose fragments lying close to the bone, union will not be delayed. Both the fractures of the upper third of the bone took longer than the average time to unite, and one took twenty weeks. The average is nearly double that recorded for the radial fractures, but possibly extra care was employed. In this series there was no case of non-union in the lower third, the recognized danger area.

There is no doubt that the basis of Baldwin's operation is well founded, as periodically patients seek treatment for non-union of the ulna three inches or so above the wrist when fixation has been brief. When further fixation or physiotherapy fails to produce union a bone graft is advisable. Consolidation of graft and bone is more likely to occur if a tibial graft is used in preference to a sliding graft from the ulna.

Group IV—Fractures Other than Greenstick with Overlap or Angulation, which were Treated by Closed Reduction

	Total	Upper Third	Middle Third	Lower Third	Average Time Under All Treatment (Weeks)	Longest Time Any One Case Under Treatment (Weeks)
Radius and ulna	39	2	17	20	9.3	26
Radius ..	14	3	2	9	9.3	24
Ulna.. ..	7*	2	2	3	9.4	13
Group as a whole	60	7	21	32	9.3	26

* Includes two cases of fracture of the upper third of the ulna with dislocation of the upper end of the radius.

Treatment of fractures in this group is one of the most difficult problems in fracture surgery. Success in alignment by closed reduction is economical in the patient's time and saves pain and further operative treatment.

Radius and Ulna.—When there is *angulation* this is corrected and a plaster is applied under an anaesthetic. *When there is overlap* the patient is anaesthetized and traction and countertraction applied. Manipulation will frequently succeed in reducing the transverse and, less often, the oblique fractures. If neither bone hitches the fractured ends are turned backwards towards the extensor surface of the forearm and an attempt made to hitch them. This method is easily understood by those who employ it in open reductions. Should this fail a method worthy of trial is to manipulate the radius only and, if this hitches, employ the radius as a lever and pull out to full length the fragments of the ulna. The reverse of this is less easy.

(i) If alignment and end-to-end apposition are achieved—that is, "both bones hitched"—plaster is applied in the manner described. For its application with the patient recumbent the arm is abducted to a right-angle, the elbow flexed to a right-angle, and the fingers, pointing to the ceiling, held by an assistant. It is most important to mould in the interosseous space to prevent it "being crowded," as there is a great tendency for the upper radial fragment to tilt towards the ulna.

(ii) If neither bone can be hitched the decision has to be made as to whether to employ fixation with the bones in the position of overlap or to proceed to another method of reduction. It is universally accepted that unreduced fractures of the lower third of both bones, at the same level, in children are followed by full function and a perfect radiographic appearance after a few years. This may also apply to fractures of the upper third, but the prognosis is less certain. In adults overlap of both bones should be corrected.

(iii) If one bone is hitched and the other not, the decision whether full function will be obtained is usually difficult. In children, when the radius is hitched and not the ulna, plaster is applied; but when the ulna is hitched further treatment is advised. In adults, risk as to ultimate function is taken if alignment is not restored. Should it be found that good alignment with ample separation of the radius and ulna cannot be obtained with the forearm fully supinated, but is possible, say, in mid-position, the limb should be put in plaster in this position. Similarly, full wrist dorsiflexion or slight palmar flexion—although undesirable on general principles—may enable the surgeon to place the bones in better alignment.

The treatment advocated when manipulation has failed is considered subsequently, when operations on forearm bones are discussed.

The value of physiotherapy in these cases of imperfect reduction is worthy of consideration. The most valuable form is what may be termed "preventive." If the patient moves the fingers and thumb from the day of the fracture, which is always possible in closed fractures, there should be no stiffness of finger-joints, and the wrist and elbow will regain their movements if their fixation has been in the correct position. As pronation is a movement of necessity, the patient will regain this if the mechanical relations of bones and radio-ulnar joints allow it and the muscles and their nerve supply are intact. The muscles will be assisted by physiotherapeutic measures when fixation can be released.

RADIUS

As overlap of the radius may be associated with a complete separation of the lower epiphysis of the ulna, or in adults with subluxation or dislocation of the inferior radio-ulnar joint, it is important that the skiagram should include the wrist-joint. Theoretically, it should be easier to reduce by manipulation a fracture of the radius alone than one of both bones, as the ulna can be used as a lever. This is seldom the case, as fractures of the radial shaft are usually oblique and will not hitch. If manipulation fails to correct an overlap in the distal half of the radius, further measures should be adopted to correct this in an adult; but it is not always necessary in a child. If the inferior radio-ulnar joint is not in anatomical alignment open reduction is advisable (see below).

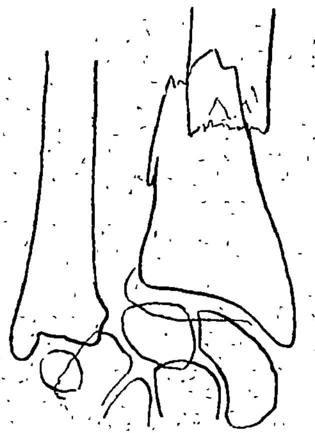

FIG. 1.—Sketch to illustrate fracture of radius with overlap and dislocation of inferior radio-ulnar joint.

ULNA

No discussion on fractures of the ulna alone is complete unless adequate thought is given to the "fracture of the ulna in its upper third associated with an anterior dislocation of the upper end of the radius." The anatomy of the fracture is an angulation or overlap of the ulna, with displacement of the head of the radius above the capitellum, the orbicular ligament being torn. The radial head may be within or have penetrated the anterior ligament of the elbow-joint. There is shortening of the length of the forearm. The injury is most common in childhood, when the ulna is usually broken in the upper third; after the age of 15 the ulna tends to be broken nearer the centre of the shaft. The injury is not to be confused with (*a*) oblique fracture of the olecranon with forward dislocation of the radius and ulna, with intact orbicular ligament usually occurring in the early "teens"; nor with (*b*) fracture of the upper third of the ulna with fracture of the radial neck in adults.

A correct diagnosis is essential for the treatment. Error may occur owing to the skiagram not including the elbow-joint, so that there is lack of appreciation of the dual injury. Early and correct treatment should produce a normal elbow. Unsuccessful treatment or delayed treatment may be followed by limitation of movement and weakness, particularly if a false joint is formed at the site of ulnar fracture. All the cases that have been treated by manipulation and plaster, or by operation, within a few days have full movement and no disability, whereas all cases operated on after delay have disability, including the case of a boy aged 4. The immediate treatment consists of reduction and fixation.

Reduction.—Unless the head of the radius has passed through the anterior part of the capsule, which is probably rare, the reduction of this dislocation causes no difficulty. As length is given to the forearm by such a manipulation, the ulna tends to come into alignment. However, this is not sufficient, for the length of the forearm should be maintained by the ulna, so that there is joint space between the head of the radius and the capitellum. If the surgeon relies on the length of the forearm being maintained by the radius, the radial head is likely to be pressed against the capitellum. In that position redislocation is liable to occur, or if it does not erosion of articular cartilage and subsequent traumatic arthritis will follow. Hence the alignment of the ulna is the primary consideration. When the fracture is transverse or oblique with a notch, it should be possible to manipulate the bone until it is hitched and full length obtained. Probably during the manipulation the upper end of the radius has slipped back into place. If the ulnar reduction is difficult traction and counter-traction with manipulation can be tried, or the manipulation can be repeated after reduction of the head of the radius.

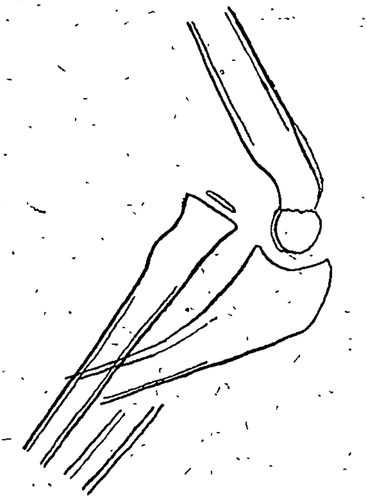

FIG. 2.—Sketch of typical fracture of upper third of ulna with forward dislocation of upper end of radius.

Fixation.—As soon as the surgeon feels confident that he has achieved the reduction, a plaster is applied as for a fracture of the forearm. At the same time traction and countertraction should be applied by a band round the arm tied to a hook or held by an assistant, and by traction on the fingers. Moulding to keep the upper half of the radius back is as important as that to maintain the ulnar alignment. This plaster is removed in six weeks, and the posterior half worn for another two weeks.

There is likely to be criticism of this position of the arm, as acute flexion is reputed to be the position of choice after setting this fracture-dislocation. But it is recognized by advocates of this position that redislocation may occur. In acute flexion no attempt is made to keep a joint space, and the cup on the head of the radius may not remain in correct relation to the capitellum. Further, the alignment of the ulna is far more difficult to control in this position than when the elbow is at a right-angle. Although some orthopaedic surgeons may favour the acute-flexion position and take exception to the position advocated, probably all agree that the best functional end-results are to be expected if the ulna has been allowed to heal with no deformity or shortening.

INDICATIONS FOR OPEN OPERATION

On the Ulna.—(*a*) Failure to reduce the overlap of the ulna. (*b*) Rare cases when the upper end of the lower ulnar fragment has penetrated the skin. An open reduction is likely to enable the surgeon to hitch the ulna and give it full length, and internal fixation is not required unless there is a constant tendency to angulation. (*c*) In late cases with angulation of the ulna or non-union of the fracture.

On the Radius.—(*a*) When reduction is not achieved by manipulation the outer side of the elbow-joint should be explored and the entanglement of the head in the soft structures relieved. (*b*) When redislocation of the radius occurs: it is contended that this is not an indication for operation on the radius, as it can be controlled by proper reduction of the ulna and moulding of the plaster. (*c*) In late cases of unreduced dislocation the question may arise whether a greater range of movement will occur if open reduction is employed. It is considered that an open reduction of the dislocation and of the fracture by separate incisions is indicated if the patient is seen during the second to sixth week or so.

After a long interval in an unreduced case it may be tempting to remove the head and neck of the radius, but little is to be gained by this, and the arm is likely to be weaker.

On the Orbicular Ligament.—Fascial grafts to repair or replace the orbicular ligament can be employed. If an open reduction of the dislocation is indicated a stitch without a graft will assist in the healing. When a case is operated on a few weeks after the injury an attempt to make a new ligament is desirable. In the late unreduced cases such a repair is not likely to be followed by good function. The fixation of the fascial graft to the ulna is difficult.

OPERATIVE TREATMENT OF FRACTURES OF RADIUS AND ULNA

If manipulation fails to correct displacement of the fracture the surgeon has to decide on the next procedure. This decision should be made immediately, because an operation will be more difficult after a few weeks, and its result is likely to be less effective than if it is undertaken as soon as the skin is adequately prepared. It has been stated already that failure to correct overlap of forearm bones in children does not necessarily indicate that further intervention is advisable. The procedures possible are:

Closed Reduction by Mechanical Methods.—(*a*) By axis or skeletal traction: neither of these has appealed to me in treating the fractures under discussion, and my experience is limited. (*b*) Manual traction assisted by manipulation of Steinmann's pins inserted into one or both fragments.

Open Reduction.—When carried out within a few days of the injury open reduction makes it possible to restore anatomical alignment with little trauma to the tissues. The pain is slight after two days, and function is restored in a reasonable time. Provided adequate skin preparation is undertaken and the operation is done under such conditions as are suitable for any bone surgery, the risks of complications are minimal.

Group V—Fractures Other than Those Shown in Groups I-IV which were Treated by Open Operation owing to Overlap, and Failure of Closed Reduction

	No. of Cases	Open Reduction	Plating One or Both Bones	Bone Graft	Average Time Under All Treatment (Weeks)	Longest Time Any One Case Under Treatment (Weeks)
Radius and ulna	22	16	5	1	20.2*	112
Radius ..	4	0	4			
Radius lower third with separated ulnar epiphysis ..	1	1				12
Ulna upper third with dislocation upper end radius ..	1	1				12
Group as a whole	28	18	9	1		

* If 2 cases under treatment for 112 and 52 weeks are excluded, the average length of time under treatment is 15 weeks.

OPERATION

This is as follows. (*a*) Application of pneumatic tourniquet after exsanguination of the limb. (*b*) Exposure of the fracture and a length of the shaft above and below this. (*c*) Incision and raising up of the periosteum and attached muscles in the axis of the limb. (*d*) Elevation of each end of the fracture by grasping the shaft an inch from the fracture with bone-holding forceps which will fit the radius or ulna. (*e*) Removal of clot and other intervening substance. (*f*) Realignment and hitching of the bones by grasping each fragment; this is possible by traction, or angulation into the wound, hitching, and straightening. It may be necessary to carry out this on each bone. It is my routine to restore the radius first. If the ulna has hitched as the length of the forearm is re-established, the bone is not exposed. If the ulna has not hitched the radial wound is packed and the ulna realigned through a second incision. The ulnar fracture will generally dovetail in and fit snugly. This wound is closed and the radius is then realigned.

(*g*) *Fixation.*—(i) In most cases requiring operation the fracture of the radius and ulna is oblique, but there are notches at the fracture, which can be fitted in. So the operation is limited to an open reduction. If the bone fits snugly and does not bow, the periosteum and overlying muscles are stitched, the wound closed, and plaster applied. A small dressing is used and a plaster slab applied to skin and dressing on the extensor surface of the limb. More padding is applied before circular turns are made. (ii) Internal fixation is advisable in all cases of fracture of the radius in the upper third owing to the tendency for the upper fragment to swing inwards, and in every case in which there is doubt as to whether the radius will stay in correct alignment. A thin plate with two screws in each end is used. Obviously the risk of inserting a plate by Lane's technique is small, and nothing can be more disheartening than the occurrence of angulation or slipping of the bones during the closure of the wound or application of the plaster-of-Paris after an "open reduction" without fixation. Plating of the ulna is seldom necessary. A bone graft may be employed if a long loose fragment makes the application of a plate to the two ends of the shaft difficult. Cases of non-union of bone after plating radius and ulna are known to us. It is usually possible to obtain the history and serial skiagrams. This serious complication appears to be due to fixation of the plate to the shaft although the fractured ends are not in apposition, to loosely fitting screws, to the introduction of sepsis, or to splinting of an inadequate type or for too short a period. In some cases more than one of these factors has been present.

All the cases reported in Group V are known to have full function. The case under treatment for 112 weeks is interesting in showing difficulties which may be encountered.

A girl aged 8 had a transverse fracture at the junction of the middle and lower thirds of the radius and ulna, with overlap of the bones. At the time of the primary reduction, which was satisfactory, it was noted that she had blue sclerotics. She had not broken any other bones. Just before she was due for discharge she fell down and re-fractured the limb, producing a similar fracture. It was again reduced satisfactorily. Shortly after the child left hospital the mother thought the plaster was dirty, so she immersed the whole limb in water. When this plaster was removed the arm was tense and the child developed the signs of an ischaemic paralysis. She was under treatment for many months for this, and union of the bone was delayed. While still under treatment she broke it again, but the setting was not satisfactory and an open reduction was carried out. That was in 1936, and the child now has a normal arm.

The patient under treatment for one year was a man of 36 who had the radius and ulna plated. The records suggest that he wished to attend hospital until litigation was settled. Apart from these two cases the average period of treatment is 50 per cent. longer than when treatment is by closed reduction.

Complications

Swelling of the forearm is a frequent sequel to reduction and application of plaster-of-Paris. This should be treated by incising the plaster up the middle of the front of the forearm, and not by enlarging the opening for the fingers and thumb. If the patient is not relieved the incision should extend the whole length of the plaster. The plaster should be prised open, and later can be fixed together by elastoplast. *Re-fracture* occurred in this series in ten children; of these, three had re-fractures twice and one three times. It is difficult to determine how many of these sustained a subsequent injury sufficient to break a normal bone. When some years ago it was first noticed that re-fractures were occurring, the length of fixation was increased; but study of the records does not suggest that this eliminated the complication, to which attention was drawn by me (Buxton, 1926). *Volkmann's ischaemic contracture* (Garber, 1939) occurs in a small number of cases treated either in plaster casts or splints. It may be accompanied by median nerve paralysis. Its recognition should be followed by removal of splinting and elevation of the limb. If pain persists and voluntary movement is still greatly restricted, operation is indicated within a few hours. *Median nerve paralysis* without contracture was seen in one case in the series. Delayed operation restored function. Ulnar nerve injury has not been observed. *Synostosis* of radius and ulna is recorded as a not uncommon sequel to infected fractures of radius and ulna, but must be rare in closed fractures. *Decalcification* of the forearm bones and carpus may follow closed fractures in children and adults, but is less common than around the ankle. It appears that imperfectly reduced fractures are more liable to this complication than those which have been perfectly aligned.

Conclusion

In the treatment of forearm fractures two principles must form the basis of treatment: the correction of displacement of the bones and the fixation of the limb for a sufficient length of time to prevent the risk of displacement. The patient has seldom to be in bed; for even after operation he can be up in a few days. The shoulder and fingers should be moved by the patient himself from the beginning of the treatment. The superior and inferior radio-ulnar joint must be in perfect anatomical position after setting a forearm fracture.

Summary

The progress of nearly 400 fractures treated in one hospital has been studied. These are considered in five groups.

Stress is laid on recognition and treatment of dislocation or subluxation of the superior or inferior radio-ulnar joint with fracture of a single forearm bone (fracture of upper half of ulna and forward dislocation of upper end of radius, and fracture of lower third of radius with dislocation of inferior radio-ulnar joint).

Volkmann's ischaemic contracture is recorded.

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CLINICAL SIGNIFICANCE OF TUBERCLE BACILLI IN THE URINE

BY

C. E. DUKES, M.Sc., M.D., D.P.H.

Pathologist to St. Peter's Hospital for Stone and St. Mark's Hospital, London

The term "urinary tuberculosis" is used to describe a clinical condition characterized by tuberculous lesions in the urinary tract, by the presence of urinary symptoms, and by the excretion of pus and tubercle bacilli in the urine. The term "tuberculous bacilluria" is employed to cover an occult or subclinical tuberculous infection associated with the excretion of tubercle bacilli in the urine but unaccompanied by any urinary symptoms. Tubercle bacilli are to be found in the urine in both these conditions, but it is important to decide whether the case is one of established urinary tuberculosis or of simple bacilluria. The object of this paper is to compare the results of urine tests in these two conditions.

Tuberculous Bacilluria

Tuberculous lesions of the urinary organs, whatever be their location, are almost invariably the consequence of a blood-stream infection from an active tuberculous lesion in some other organ in the body. All the evidence goes to show that the kidney is the first part of the urinary tract to be affected and that the renal lesion is at first bilateral. Tubercle bacilli brought to the kidney by the blood stream give rise to minor tuberculous lesions unaccompanied by signs or symptoms. Most of these are undetected and heal spontaneously without causing any discoverable injury. So long as these minor lesions persist, tubercle bacilli may be excreted in the urine in small numbers. Conversely, whenever tubercle bacilli are found in the urine it may be assumed that pathological lesions exist in the kidney, though a particularly thorough examination may be necessary to discover them. A perfectly healthy kidney cannot excrete tubercle bacilli.

This type of occult or subclinical tuberculous infection of the kidney, accompanied by tuberculous bacilluria, may occur in any form of tuberculosis, but it is specially likely to be found in forms of tuberculosis spread by the blood stream, such as disease of bones and joints. Harris (1930) proved the existence of tuberculous bacilluria in sixteen out of forty-three adults and nine out of sixty-seven children with tuberculous bone lesions. Band (1935) also found tubercle bacilli in the urine of twenty-five out of 174 patients with extra-urinary tuberculosis. He watched these patients for several years, but only two subsequently developed renal tuberculosis. Tuberculous bacilluria is not so common in pulmonary tuberculosis, and Menton (1932) found only one case in seventy-six patients examined. However, the proportion of positive findings must depend on the frequency with which tests are carried out. Mack (1937) found fifteen cases of tuberculous bacilluria in twenty cases of extra-urinary tuberculosis, but some of his cases were examined several times. One patient was examined on fourteen occasions, but only four tests were positive.

The suspicion may arise that a tuberculous bacilluria is simply the first sign of clinical renal tuberculosis, which may manifest itself with the usual signs and symptoms at a later date. This is not necessarily the case. Many patients suffering from tuberculous lesions in other organs of the body than the urinary tract, but exhibiting tuberculous bacilluria, have been kept under observation for several years, yet no urinary symptoms have developed. In fact, further tests have shown that the kidneys have ceased to excrete tubercle bacilli, and it may be assumed that the minor lesions in the kidney have healed. We are now in a position to group together the features which characterize the excretion of tubercle bacilli in tuberculous bacilluria. They are as follows:

(1) Only a few tubercle bacilli are excreted in the urine, and it is very rare for them to be discovered in stained films of the centrifuged deposit. Guinea-pig inoculation is nearly always necessary for the demonstration of tuberculous bacilluria. (2) The excretion of tubercle bacilli is intermittent, so that the test may be positive on one occasion and negative on another. (3) The urine is clear in appearance and does not as a rule contain pus or blood, but at the time when tubercle bacilli are being excreted microscopical examination will reveal an excess of leucocytes in the urine. (4) In cases of tuberculous bacilluria the excretion of tubercle bacilli may cease when the patient's general health improves.

Urinary Tuberculosis

As already stated, there is abundant evidence that the minor tuberculous lesions of the kidney responsible for tuberculous bacilluria may heal spontaneously; on the other hand, a small proportion progress and give rise to clinical urinary tuberculosis. No hard-and-fast line can be drawn between tuberculous bacilluria and clinical urinary tuberculosis, but in general it may be said that clinical urinary tuberculosis is accompanied by symptoms, by constant abnormalities in the urine and pathological changes in the kidney, demonstrable by radiology and by renal function tests. Since in most cases the patient only comes for medical examination when urinary symptoms have developed it follows that tuberculous disease of the urinary organs is rarely discovered in the preclinical phase. Now, the symptoms of urinary tuberculosis are not directly due to disease of the kidney but are caused chiefly by the passage down the ureter of irritating material and by the extension of the disease to the ureter and bladder. In fact, most cases of urinary tuberculosis are not diagnosed until the tuberculous lesion in the kidney has broken down and discharged its contents into the renal pelvis and infected the ureter and bladder. The disease is now at such an advanced stage that it may require to be treated by nephrectomy if only one kidney is affected.

Surgeons have often declared that nephrectomy is the only treatment for unilateral tuberculous disease of the kidney, because the disease cannot heal by natural means. This statement should be qualified by saying that natural cure is unlikely in any case of urinary tuberculosis discovered by a surgeon, for the simple reason that the surgeon has discovered it too late. In the earlier pre-clinical stage the disease might well have been arrested and cured by medical treatment. Up to the present the only patients who have had the good luck to have their renal tuberculosis discovered in the pre-clinical or occult stage have been those who happened to be selected for inclusion in a research or who enjoyed the services of an exceptionally thorough clinical pathologist. A much larger number of cases might be discovered and be given timely medical treatment if urine tests were carried out as a routine in extrarenal tuberculosis, especially in disease of bones and joints which are obviously haematogenous in origin. Regular examination of the urine with inoculation into guinea-pigs might thus reveal cases of tuberculous bacilluria in the pre-clinical stage. Surely it is as important to watch over incipient tuberculosis of the urinary organs as it is to carry out repeated examination of the chest or of the rate of blood sedimentation.

Comparison of Urinary Conditions

We may now compare the condition of the urine in clinical urinary tuberculosis with the state of affairs in tuberculous bacilluria. The chief points of distinction are as follows:

1. In clinical urinary tuberculosis the urine contains large numbers of tubercle bacilli, and they can generally be found in stained films of the centrifuged deposit. Cultures and guinea-pig tests are rarely necessary for the diagnosis of clinical urinary tuberculosis. It is better to repeat the microscopical examination two or three times and to make films from the deposit of a twenty-four-hour specimen of urine. When these tests have been negative, and I have proceeded to cultures and guinea-pig tests in order to allay the importunity of a surgeon, I have nearly always found the cultures and guinea-pig tests also to be negative. It often happens that something else is discovered during the six to eight weeks required for animal inoculation tests, and by the time the little guinea-pig has ploughed its lonely furrow the interest in his behaviour has considerably declined.

2. The excretion of tubercle bacilli is constant, and acid-fast bacilli can be found in films almost each time the urine is examined. I have proved this by repeating urine tests frequently, and in most cases of urinary tuberculosis it has been possible to find tubercle bacilli each day the urine was examined. In six cases of urinary tuberculosis in which acid-fast bacilli were relatively scanty I collected each specimen of urine the patient passed over a period of twenty-four hours (usually fifteen to twenty samples) and examined each one with the object of finding out at what time of the day or night tubercle bacilli were excreted in largest numbers. As a rule tubercle bacilli were most easily found in the urine passed first thing in the morning. This was not due to any influence of the hour, but simply to the fact that these samples were the most concentrated and contained the largest quantity of pus.

3. In urinary tuberculosis the urine always contains a few pus cells, and often the pyuria is sufficient to cause a definite

turbidity. I have never found tubercle bacilli in films of urine which did not contain a very few pus cells or a few red blood corpuscles. If a very dilute and watery urine is sent for examination and no pus or blood or bacteria are found in the films the best plan is to arrange to examine a more concentrated specimen or the deposit from a twenty-four-hour sample.

4. In urinary tuberculosis the excretion of tubercle bacilli will continue as long as the tuberculous lesion can discharge freely into the urinary tract. Whenever tubercle bacilli are found easily in films from the centrifuged deposit of the urine one can be sure that there is an open tuberculous lesion of the urinary tract, and if acid-fast bacteria are found in urine collected from one kidney it is certain that there is a tuberculous lesion of the kidney discharging into the renal pelvis. I reached this conclusion as the result of dissection of sixty tuberculous kidneys removed by nephrectomy before I knew of the work of Medlar (1932), Lieberthal and von Huth (1932), and Kjaer (1937). In each of these sixty cases I had examined the urine before operation, and in some had found tubercle bacilli in films, whereas in others the diagnosis had been based on guinea-pig tests, on cultures, or by other means. Whenever tubercle bacilli had been found in films the subsequent dissection of the kidney revealed an open tuberculous lesion. The smallest focus was a small tuberculous ulcer situated on the apex of a renal papilla. Next in size were small caseating lesions communicating with one of the calices. Tubercle bacilli were present in largest numbers in the ulcerating type of tuberculous lesion with extensive cavities. The films were generally negative in closed tuberculous lesions associated with calcification. In one case with double renal pelvis and double ureter I found pus and tubercle bacilli in the urine from the upper ureter, but the urine from the lower ureter contained no pus, and no tubercle bacilli were seen in films. On examining the kidney after it had been removed by nephrectomy I found an open tuberculous cavity communicating with the upper renal pelvis, whereas the tuberculous lesion of the lower pole was "closed" and had no direct communication with the lower renal pelvis.

Summary

Tuberculous bacilluria is the result of an occult or subclinical tuberculous infection of the kidney, and may occur in many different forms of extrarenal tuberculosis, especially in disease of bones and joints. Tubercle bacilli are present in the urine in small numbers only and are rarely found by microscopical examination. Guinea-pig tests are necessary to demonstrate tuberculous bacilluria. The excretion of tubercle bacilli is intermittent. The urine is generally clear in appearance, though containing an excess of leucocytes. The excretion of tubercle bacilli may cease when the patient's general health improves.

In clinical urinary tuberculosis the urine contains large numbers of pus cells, and these can generally be found in stained films. Guinea-pig tests and cultures are rarely necessary. The excretion of tubercle bacilli is constant, and will continue as long as an open tuberculous lesion can discharge freely into the urinary tract. In clinical urinary tuberculosis the urine always contains a few pus cells, and often the pyuria is sufficient to cause a definite turbidity. These points enable a distinction to be made between results of laboratory tests in tuberculous bacilluria and in clinical urinary tuberculosis.

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A PSYCHOLOGICAL ASPECT OF THE REARMAMENT PROGRAMME

BY

S. BARTON HALL, M.D., D.P.M.

Honorary Psychiatrist, Liverpool Royal Infirmary

It is forty-six years since Sir William Mather, at the Salford Engineering Works, found that reduction of weekly working hours from fifty-three to forty-eight resulted in an actual increase in total output. During the present century, and before the war of 1914–18, there gradually accumulated evidence which further illustrated the positive relation which modification of working week bore to increase of output. These findings were confirmed by the Health of Munition Workers Committee (1917 and 1918). Knight, writing in 1928, summarized his comments as follows:

> (i) Every reduction in the working day leads to a decrease in accidents, spoiled work, sickness, and absence. (ii) The reduction of working hours from twelve to ten leads to an increase in hourly and daily output. (iii) The reduction of working hours from ten to eight leads to a further increase in hourly and daily output, except in operations whose speed depends mainly on the speed of machinery. (iv) The reduction of working hours below eight, though increasing hourly output, does not usually lead to an increase in daily output.

To some engaged in medical, and particularly in psychiatric, practice it is becoming apparent that these lessons, even if they have been learnt, are not being adequately applied at the present time, and the aim of this communication is to enlist the help of the profession in drawing attention to the problem before its effects begin to make themselves felt not only upon the health of individuals concerned but upon the vigour with which the nation can continue to prosecute its cause.

Statement of the Problem

Among cases of psychoneurosis investigated at a psychiatric out-patient clinic, and in which occupational factors are prominent, there has lately come to be included a type of breakdown that can be ascribed to a situation having fairly well-defined features. The clinical characteristics, though of less striking interest than the features of the situation from which they derive, have exhaustion in some form as their common basis, and they may be grouped as follows:

(*a*) Relative failure referred to cognitive function in its finer aspects, such as attention and its associated processes of application, concentration, recent memory, maintenance of train of thought, and ability for expression. (*b*) Diminution of instinctive "drives" as displayed by some failure of emotional life, volitional and conative trends such as ability for interest, affection, capacity for "looking forward," general resilience and spontaneity—the "personality" of the patient in the sense used by Mayer-Gross (1938).

The features of the underlying situation found to be common to all cases were: (i) Skilled nature of occupation. (ii) High degree of individual, or collective (foreman), responsibility. (iii) Atmosphere of "rush" and pressure reinforced by knowledge that work was connected directly or indirectly with the nation's emergency and rearmament programme. (iv) Continuous "overtime" work, with resulting extension of working week considerably beyond normal working conditions. (v) Relatively high wages, and increased opportunity for wage-earning partly contributed to by Item iv.

Illustrative Case Material

A. B., aged 29, worked as a fitter in an arms factory. From the age of 14 to 28 he had worked in a similar capacity making machinery used in biscuit manufacture ("that suited me fine—moving about on all different types of work"). Before his breakdown he was working seven days to the week, his hours being distributed in the following way: Monday to Friday inclusive, 8 a.m. to 10 p.m. (with breaks totalling one and a half hours); Saturday and Sunday, 8 a.m. to 5 p.m. (break one hour) On alternate Sundays he was allowed off. His total working week was seventy and a half to seventy-eight and a half hours. From time to time he had the opportunity of working occasional "bursts" from 9 a.m. Monday to 5.30 p.m. Tuesday, continuously save for the usual breaks (one hour dinner, half an hour tea), together with a rest period of three hours for sleep. His weekly earnings averaged £7 15s. It was during one of the "thirty-two-hour bursts" that the patient "felt something snap" inside his head—the start of his breakdown. He complained of inability to shift his mind from one thing to another, mental depression, and pains in the limbs. He stated that "crowds overface me." He spontaneously observed that "chronic monotony set in with me; I'd never been used to being tied in the one place." He volunteered the view that his breakdown was attributable to overwork.

C. D., aged 57, was a foreman electrician to a large shipbuilding yard, where he had worked as improver, journeyman, charge-hand, and foreman for forty years. During the long years of slump and depression in trade, in which the shipbuilding industry was seriously involved, the patient had no difficulty in shouldering the responsibility, that of chief in his own department, for the whole yard. With the advent of rearmament, however, and the securing of large Government contracts the position changed very materially, and the firm were constrained to reopen a yard that had lain idle. Five weeks before being referred for psychiatric investigation the patient had had what he described as "an improvement" at work—he had been made foreman over the two yards—"and they're mad busy." He was delighted at first, had welcomed his promotion with enthusiasm; then, ten days before being seen, "something seemed to strike me in the back of the head." He complained of inability to concentrate, weakness in the legs, worry about his work, pain at the back of the head, and the feeling that he was "worn out." He expressed the view that if he had his old job back (that is, responsibility for one yard only) his difficulties would disappear.

E. F., aged 27, was a tool-setter in an aircraft factory, where he first began work in April, 1938. For three to four months before being referred for psychiatric investigation he had been working seven days a week and on continuous overtime, his hours being distributed as follows: Monday to Thursday inclusive, 8 a.m. to 8 p.m. (breaks totalling one and a half hours); Friday, 8 a.m. to 6 p.m. (break, one hour); Saturday and Sunday, 8 a.m. to 5 p.m. (break, one hour). His weekly earnings amounted to over £8. He complained of mental exhaustion, mental depression, physical feelings of tiredness, and lack of natural inclinations and appetites.

In six consecutive cases of the material under review the weekly working hours were: 76, 65, 74½ (average), 71½, 73½, 76½. The figure in the second case (65) is admittedly lower than the others, but this apparent advantage was offset by the fact that the patient, a charge-hand electro-plater in an aircraft factory, was a night worker, and had been so continuously for four years. Throughout the series studied relatively high wages were found to be the rule, remuneration for skilled tradesmen being commonly £7 to £8—and even up to £10—a week.

Discussion

To avoid confusion and unnecessary multiplication of terms it would perhaps be simplest to apply to the condition under review a term previously used by Tredgold (1933)—namely, that of "acute neurasthenia." It may be recalled that Tredgold did not use this term in a general sense, but restricted its application to a condition in which there occurs "marked failure of mental capacity" and to which "physical fatigue becomes superadded, and the individual suffers from a general nervous exhaustion. In addition to the incapacity for sustained efforts, either mental or physical, there is inability to make decisions, faulty attention and memory, loss of emotional control, and increased irritability."

To persons versed in applied psychology, whether in its social, industrial, or medical aspects, it will be apparent that the common factors enumerated above represent a combination of inducements, moral and material, that may be calculated to stimulate every department of the ego. The appeals of patriotism, self-esteem, the team spirit, and the position of personal responsibility (with associated unconscious concomitant of superiority), though indispensable to the successful prosecution of armed conflict, may, if pressed too far, reach a point when ultimate efficiency and output are threatened. Aside from all idealistic consideration, however, material urges may be no less dangerous. We shall not be surprised if we find that, after several years of unemployment, the skilled artisan welcomes the prospect of work, to say nothing of the opportunity of earning £7 or £8 weekly, even if in turn there is demanded of him continuous overtime and a 70-hour week.

From a study of the case material it is obvious that failures of patients in the series may have been contributed to by factors—personal, individual, constitutional—other than the circumstances of excessive working hours; but such factors—and they are to be found in a proportion of individuals composing any community—may not lead to breakdown unless additional and extreme external stress be applied. It may be that the perfectly adjusted personality would not break down under the conditions described; that in the absence of some constitutional predisposition, or mental conflict such as may derive from underlying discontent or unhappy personal relations, failure is impossible. It is realized that under the sustained and powerful emotional stimulus of a great national cause and effort individuals may achieve levels of performance substantially higher than may be gained in the course of their routine peace-time occupation; in the light of past experience, however, it would seem questionable whether demands so excessive as those described above can be satisfied by workers without jeopardizing, ultimately if not immediately, their total productive capacity, and it is contended that, in the type of case referred to, actual working conditions have been the exciting cause.

It may be argued that these conditions of employment are not obligatory, that the worker who is aware of strain is at liberty to take time off—as, for example, on Saturday afternoon or Sunday. The quality of insight is, however, by no means universal in its distribution, and in practice the inducements, already noted, to working all available hours prove too strong. It may further be objected that a small number of isolated cases referred to a psychiatrist afford an inadequate basis upon which to introduce the problem. There is no disputing, however, the previous scientific findings as to working conditions on the one hand, and on the other the prevalence of the 70-hour week applied to the armament industry in its various aspects throughout the country.

Conclusion

No attempt has been made in these observations to investigate or discuss the subject from the standpoint of industrial psychology in any scientific way. Nor has reference been made to methods of treatment found effective in the cases concerned. While it is true that in the majority prognosis is favourable, the conditions responding satisfactorily to psychological treatment and general measures, the object has been to call attention to the discrepancy between previous scientific findings as to working hours and conditions of work such as are current industrial practice under the exigencies of our present rearmament programme, and thereby to lay emphasis upon prevention as distinct from amelioration. If the nation is to "stay the course" in the most efficient way possible this problem will require to be looked into, and it is felt that a definite case has been made out as to the urgent necessity for detailed scientific investigation in collaboration with those whose duties bring them in touch with working conditions as they affect large groups of workers. The very demand for supreme national effort is also the argument for the closest study concerning productive capacity in its fullest and most lasting sense. The spontaneous, haphazard, and irrelevant remark of a psychoneurotic patient (a fitter), under treatment for a complaint other than anything connected with his work, may summarize and illumine the importance of this question: "Next week we'll be going on seven days—a 70-hour week. The thought comes to me, 'How long shall I stand up to that? How much shall I damage my resources for the future?'"

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The annual report for 1938 of the National Association for Supplying Medical Aid by Women to the Women of India (Countess of Dufferin's Fund, including the Women's Medical Service) reveals a gratifying increase in the support of this organization while indicating the great amount of work that still needs even more financial and other kinds of help if the intense demand for its services is to be at all adequately met. A very strong case is presented for enlarging hospitals for women and for building new ones. A tour in the North-Western Province, for example, taken at the request of the Inspector-General of Civil Hospitals showed that the women in that Province, as is also the case in other parts of India, are becoming much more "hospital-minded"; the number of maternity patients has more than doubled there in the last few years. The present hospital accommodation is quite inadequate to meet the demand, and the existing hospitals for women are all overcrowded and understaffed. It is gratifying that the unhealthy "purdah" system has been broken down, but there are still very many Indian women who would rather risk death than enter a general hospital, and a still larger number of women who would much prefer to be treated by members of their own sex for their confinements and for special diseases of women. Hospital equipment needs modernizing, and medical and nursing staffs should be brought more nearly up to the standards existing in Great Britain and the United States. Many local authorities seem to be unable to give proper financial support to the hospitals under their administration.

DOES POLIOMYELITIS AFFECT INTELLECTUAL CAPACITY?

AN INVESTIGATION ON 98 CASES

BY

R. G. GORDON, M.D., D.Sc., F.R.C.P.Ed.

J. A. FRASER ROBERTS, M.A., D.Sc., M.B.,

AND

RUTH GRIFFITHS, M.A., Ph.D.

(From the Burden Mental Research Trust, Stoke Park Colony, Bristol)

The question as to how far infections of the central nervous system have any influence on basal intelligence is one which has not been widely explored. In this country Dawson (1931) has investigated a series of cases of chorea in which he found no variation from the normal, and another of encephalitis lethargica in which he demonstrated a progressive deterioration; but, as far as we can discover, no investigation on the effects of anterior poliomyelitis has been undertaken. It might be said that poliomyelitis, being a disease whose chief incidence falls on the anterior horn cells of the spinal cord, was hardly likely to affect intelligence, but it should be remembered that it is now reasonably certain that the path of invasion is by a droplet infection lodging the virus in the post-nasal mucous membrane, whence it travels by the perineural path through the cribriform plate, and so transcerebrally to its subsequent nidus in the anterior horn cells. Furthermore, many cases show at least transient initial cerebral symptoms, which are sometimes of considerable intensity.

Mollaret (1937) in his chronaxial studies of the nervous system sums up certain experimental results on anterior poliomyelitis, which included the introduction of the virus by non-cerebral routes (intraperitoneal, etc.). The interest of this study is that it suggests the existence of a cerebral disturbance occurring before the evident onset of symptoms. Moreover, this disturbance is found as constantly in abortive or asymptomatic cases as in those which develop typical paralysis. It bears witness without doubt to the constancy of a hitherto unsuspected early encephalitic dissemination of the virus. For these reasons it seemed worth while to attempt to determine whether poliomyelitis affects general intelligence, as measured by standard tests, especially as it is not unusual for parents or teachers to express anxiety as to how far this disease may affect the intellectual as well as the physical integrity of the unfortunate victim.

Selection and Testing of the Group

All the cases were derived from those coming under the scheme of the Bath and Wessex Orthopaedic Hospital and clinics, to the surgical staff of which we wish to express our gratitude for allowing us access to them. All children between the ages of 4 and 16 who during the period of investigation were under treatment at the central hospital for the acute stage of poliomyelitis or its residual effects were tested on the Stanford-Binet scale. In order to increase the numbers, and to include cases the onset of whose disease had occurred several years before the tests were applied, a further group was examined at some of the clinics. The children tested were those who happened to attend on the days of the visits of the psychologist; apart from this there was no selection.

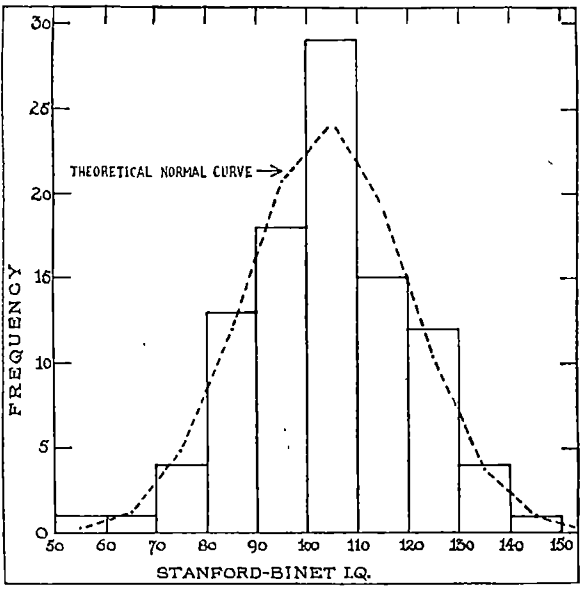
Rather more than a hundred cases were tested, but subsequently this number was reduced to ninety-eight after a very rigid clinical survey with the object of excluding those who did not present unequivocal evidence that their disability was due to poliomyelitis. Some of the cases came from rural areas, others from urban areas, but all were of the economic status represented by the elementary school population. Some had been hospitalized at the onset of the illness; others subsequently, for the purpose of orthopaedic treatment of residual disabilities, whether by operative or other measures; while some had not been hospitalized at all, but had been under observation at the clinics.

Results

The following table shows in somewhat condensed form the Stanford-Binet I.Qs. of the ninety-eight children. The diagram presents the same results graphically.

Binet I.Q.	No. of Cases	Binet I.Q.	No. of Cases
50-59	1	100-109	29
60-69	1	110-119	15
70-79	4	120-129	12
80-89	13	130-139	4
90-99	18	140-149	1

Mean I.Q., 103.91. Standard Deviation, 15.89. (Ungrouped figures.)



The problem is this: Does this sample of children yield the same average result as would a sample of normal children drawn from the general population? Furthermore, does the variability, the spread, of the results indicate a range of variation similar to what would be found in a representative group of healthy children?

The Stanford-Binet scale has been very widely used over many years, and it has been found that an I.Q. of 100 is, in fact, very close to the average I.Q. of the general population. Thus it is clear that the average performance of the present group does not fall below what could confidently be expected from a random group of normal children. A more thorough examination of this point is, however, possible. In recent years a survey of school children, selected by age only, was made in the city of Bath (Roberts and Griffiths, 1937). The city of Bath is a part of the area from which were drawn the patients included in the present study, and represents the most considerable urban district within that area. In view of the fact that it is generally recognized that the mean intelligence in rural areas is somewhat below that in urban areas, it is to be expected that a random sample drawn from the whole area covered by the present study would certainly not yield a sample superior to the previous one.

The Binet testing was carried out by one of us (Ruth Griffiths), who was also responsible for most of the testing in connexion with the Bath survey; such testing in that survey as was carried out by others was standardized in detail to correspond to hers, so that the figures for the two groups are strictly comparable. The mean I.Q. for the Bath school children was 98.8 and the standard deviation 15.2. It will be seen, therefore, that the present group exceeds the Bath group in respect of mean performance, while in variability, as shown by the standard deviation, there is no significant difference.

Actually the present group is significantly higher in mean I.Q. than the previous complete group, but the absolute difference is of course small. The discrepancy may well be due to a difference in age at test. The children composing the present group were considerably younger than those composing the Bath group, and it is known that the Stanford revision is slightly too difficult at older ages and slightly too easy at younger ones (Terman and Merrill, 1937). Small though this effect is, it is probably sufficient to account for the somewhat higher figure yielded by the present group, though that group is too small to permit a demonstration of the slight fall in I.Q. as age increases.

There is therefore very strong evidence that in mean performance a group of children who are suffering from, or have suffered from, poliomyelitis do not fall below the performance that would be shown by a random group of normal children drawn from the general population.

It has already been mentioned that in variability of results, as measured by the standard deviation, the present group does not differ appreciably from the random Bath group or, in fact, from the results obtained by many investigators on school children in various parts of the world. A more precise examination was, however, made, and showed that the distribution of I.Qs., summarized in the preceding table, did not show any significant departure from what would be expected on the basis of the normal curve; this result, too, is what would be yielded by a sample of similar size drawn from the general population. It can be concluded, therefore, that a comparatively large sample, adequate for this discussion, shows clearly that children who suffer from poliomyelitis give just the same average results as do ordinary normal children, and that the variability of the results also, their spread, their range, is simply that of a normal group.

In view of the unequivocal nature of the foregoing results it is of course very unlikely that any subdivision of the children could reveal an association between the level of general intelligence and any special factors. This proved to be the case in regard to all the analyses we have made. The results are set out, accordingly, in very brief form.

1. *Sex Distribution.*—46 girls: mean I.Q. 102.1. 52 boys: mean I.Q. 105.5. The difference is not statistically significant.

2. *Age at Onset of Disease.*—There was no association, as is illustrated by the following table:

Age at Onset	No. of Cases	Mean Binet I.Q.
Less than 4 years	30	104.1
4–7 years	32	103.8
8–14 years	36	103.9
Total	98	103.9

3. *Interval between Onset of Disease and Performance of Test.*—Once again there was no association.

Interval between Onset of Disease and Test	No. of Cases	Mean Binet I.Q.
0–11 months	21	104.5
1–4 years	38	103.7
5–15 years	39	103.8
Total	98	103.9

Thus there is no evidence either of a depression of intelligence which passes off or of a depression which is produced by the after-effects during the years of childhood.

4. *Occurrence of Clinically Recognizable Cerebral Symptoms at Onset of Disease.*—Group 1: None; 60 children. Group 2: Minor symptoms; 22 children. Group 3: Pronounced symptoms; 16 children.

Group	No. of Cases	Mean Binet I.Q.
1	60	103.4
2	22	105.4
3	16	103.8
Total	98	103.9

The occurrence of cerebral symptoms is therefore of no subsequent significance in regard to the level of general intelligence.

Conclusion

This study shows that an attack of poliomyelitis does not, either at the time or subsequently, depress the level of general intelligence as estimated upon the Stanford-Binet scale. The anxious parent may therefore be reassured so far as basal intelligence is concerned, but two other points must be kept in mind by the physician. In the first place the child affected by poliomyelitis may be absent from school for long periods; unless provision is made by home tuition or, as is done in orthopaedic hospitals, by the provision of special educational facilities, his educational achievement may be very much behind that of his contemporaries, even though his basal intelligence is not affected. Secondly, the child crippled by poliomyelitis may, unless care is taken, develop emotional reactions to his environment which may result in serious personality maladjustments; these may determine definite educational backwardness simulating true mental retardation.

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THE PREVENTION OF DEFAULTING FROM V.D. TREATMENT CENTRES

BY

C. HAMILTON WILKIE, M.B., Ch.B., B.Sc.

Director of Venereal Diseases Services, Leicester Royal Infirmary

With the recent advent of the new chemotherapeutic methods of treating gonorrhoea there is likely to be a considerable increase of "defaulters" from the venereal disease treatment centre. Defaulters are patients who cease to attend before all the necessary treatment has been given or before the complete tests of cure have been performed. In addition, many will not seek medical aid. They will depend on a limited amount of self-administered chemotherapeutic treatment. Consequently, these patients receive no thorough tests of cure. Should this tendency be allowed to develop an increase of venereal disease is possible. Methods of dealing with the question are discussed below and an analysis of male defaulters at the Leicester V.D. centre follows.

Public V.D. Lectures

The education of the public on the dangers of venereal disease is now an important part of the V.D. scheme in Leicester. It may be of value to record some of the results. Two periods of six years are compared—1926 to 1931, and 1932 to 1937 inclusive. During the first period practically no propaganda was conducted.

At first some people opposed the idea of public lectures on such a subject. Indeed, the term "venereal diseases" was avoided in the public notices which advertised the lectures in 1932. The bills displayed on trams and buses, in factories, in public lavatories, and in the police headquarters and St. John Ambulance headquarters were headed "Lectures on Social Hygiene." In 1933, however, it was considered that even the term "venereal diseases" could appear in public notices. The popularity of the lectures was apparent from the beginning, the lecture halls being crowded. Each lecture, with lantern slide demonstration and discussion, lasted about two hours. I preferred my own set of lantern slides to an obviously acted film. The discussion which followed always proved valuable. Questions had to be stopped after some sixty minutes, otherwise they would have gone on for most of the night. Those asked were surprisingly intelligent, as the following examples show.

Can a person get venereal disease from a lavatory seat? Can one get venereal disease from domestic animals? Does a woman necessarily know when she has venereal disease? Can a man get venereal disease from having sexual intercourse with a woman when her period is on? Does circumcision prevent venereal disease? What is the speaker's opinion on masturbation? Is it always certain that a man will contract venereal disease should he have connexion with a woman who is known to have it (no preventives being used)? What is the speaker's opinion on prostitution? Why do we not educate the public more than we do on the dangers of venereal disease? Why not instruct the civilian population on preventive measures? Should young people contemplating marriage have tests for venereal disease? Is there any danger of contracting venereal disease from blood transfusions? Can venereal disease of the testicle follow a kick on that part? What is meant by "whites"?

After one of the earlier public lectures I was accused of making it appear that venereal disease could be cured too easily. It was argued that I was encouraging promiscuity. My accusers, however, represented only a few of the extremely narrow-minded. Those accusations were made a few years ago and are now forgotten. I wonder what effect the newer chemotherapeutic methods of treatment will have on promiscuous sexual intercourse. Already the "new tablets" have been claimed to be antivenereal, contraceptive, aphrodisiac, and abortifacient (!).

In public lectures on venereal diseases special reference must be made to the non-venereal patient. Attendance at a V.D. centre does not necessarily indicate venereal disease. Every effort should be made to remove the stigma associated with attendance at a V.D. department. The designation "special department" would be better than "venereal disease department." Some centres do use the better term. The importance of the infected patient attending until the completion of treatment and tests of cure must also be stressed. Quite often patients, perhaps defaulters, attend these lectures. It sometimes happens that a few advanced syphilitic patients are present. A ray of hope and encouragement can be of value to them.

Communication with the V.D. Defaulter

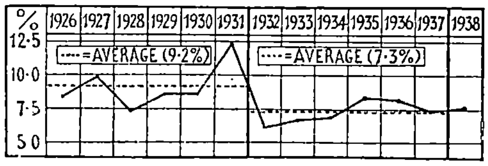
Compulsory notification and treatment of venereal disease is not in force in England at the present time. Some authorities believe that a modified form of compulsion should exist, others believe in strict secrecy and free treatment centres. Under the present arrangements confidence between patient and venereologist must be rigidly kept. We do, however, ask the patient if he has any objection to our writing him should he default. Invariably no objection is given. Of course it is explained that any letter sent will be non-committal in character, not revealing the nature of the complaint or the department attended. Some patients return on receiving such a letter. In other instances the letter is ignored or is returned marked "Not found." A few centres now employ a trained social service worker or almoner to follow up defaulters. I believe that an almoner specially trained for this type of work may be useful for women and children. At the present time I am against the practice of employing an almoner for male cases. The specially trained almoner, usually a lady, no matter how tactful, may inadvertently be responsible for other members of the household getting to know that the son or husband is attending the V.D. centre. The average male patient would not feel that secrecy was in force if a social worker attempted to call on him.

Co-operation between V.D. Officer and General Practitioner

Confidential medical reports between the V.D. officer and the patient's own doctor do not in any way constitute a breach of confidence. It is the practice at this centre to give a written report to the doctor who sends the patient to the V.D. department, and also a final report when cured. Approximately 20 per cent. are referred to us from their own doctor. The general practitioner can often give valuable assistance in persuading contacts or possible congenital patients to attend.

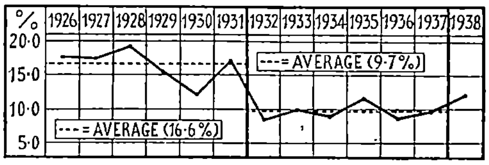
As a result of the chemotherapeutic treatment of gonorrhoea, co-operation between the general practitioner and the venereologist will in future be more important than ever. There is a tendency to give insufficient dosage of the sulphonamide derivatives in acute urethritis and not to follow treatment with the necessary tests of cure. Some cases fail to respond to the newer methods and require additional treatment. The irrigating outfit will still play its part. The complete tests of cure, including urethroscopic examination, sounds, routine blood tests, and prostatic smears, are as essential as ever. Indeed, as a result of late relapses appearing I believe that the observation period should be extended. Some of the spectacular "cures" met with are not so wonderful as at first imagined.

Graph 1.—Yearly percentages of male gonorrhoeal cases on the records who defaulted before completion of treatment. A serious type of defaulter.



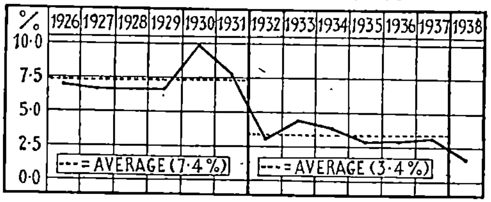
Average 1926–31, 9.2 per cent.; 1932–7, 7.3 per cent.; for 1938, 7.7 per cent. Increase anticipated for 1939.

Graph 2.—Yearly percentages of male gonorrhoeal cases on the records who defaulted after treatment but before tests of cure were completed.



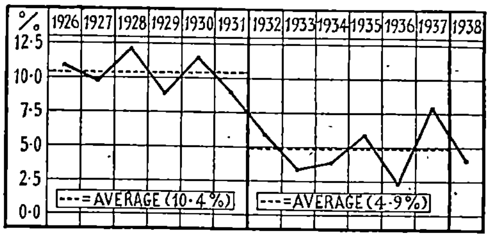
Average 1926–31, 16.6 per cent.; 1932–7, 9.7 per cent.; for 1938, 12.1 per cent. Increase anticipated for 1939.

Graph 3.—Yearly percentages of male syphilitic cases on the records who ceased to attend before completion of one course of injections. A serious type of defaulter, especially if originally primary or secondary syphilis.



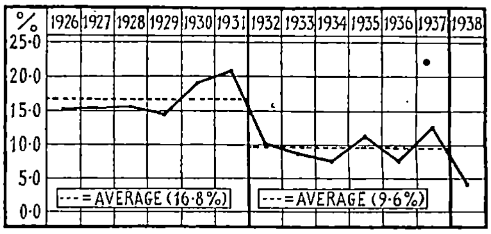
Average 1926–31, 7.4 per cent.; 1932–7, 3.4 per cent.; for 1938, 1.6 per cent. No increase anticipated for 1939.

Graph 4.—Yearly percentages of male syphilitic cases on the records who ceased to attend after completion of treatment, but before final tests of cure (blood W.R. and Kahn tests; C.S.F. examination, and clinical overhaul).



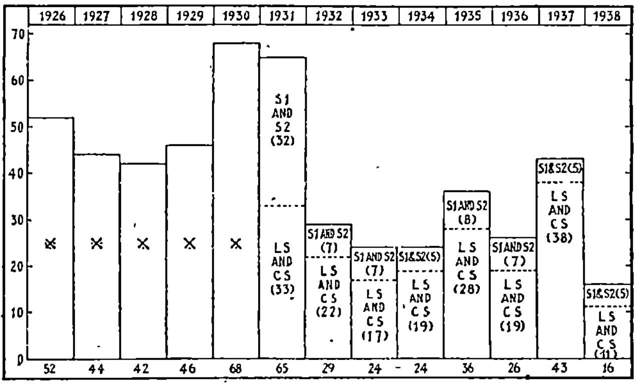
Average 1926–31, 10.4 per cent.; 1932–7, 4.9 per cent.; for 1938, 4.1 per cent. No increase anticipated for 1939.

Graph 5.—Yearly percentages of male syphilitic cases on the records who defaulted before completion of treatment.



Average 1926–31, 16.8 per cent.; 1932–7, 9.6 per cent.; for 1938, 4.3 per cent. No increase anticipated for 1939.

Graph 6.—Analysis of male syphilitic cases who defaulted before completion of treatment.



S 1 = primary syphilis. S 2 = secondary syphilis. L S = all later stages. C S = congenital syphilis. * = all stages (not classified).

Detailed Analysis of Male Defaulters

The six graphs are self-explanatory. They show how the male defaulters at Leicester V.D. centre have varied in the two periods considered in this article. During the first (1926–31) no public lectures were given, while in the second (1932–7) extensive propaganda work and other methods of reducing defaulters were carried out. The defaulters for the year 1938 are also given.

Conclusions

I have no doubt that public lectures on venereal diseases are of value. Certainly we have a few undesirable syphilophobic and gonophobic patients appearing at the clinic after attending a lecture, but this disadvantage is outweighed by the return of defaulters and the attendance of the early infected case.

The graphs given above show that we in Leicester have had a considerable fall in the percentage of defaulters. Two types of gonorrhoeal defaulters dropped from an average of 9.2 to 7.3 per cent., and from 16.6 to 9.7 per cent. respectively. Three types of syphilitic defaulters dropped from an average of 7.4 to 3.4 per cent., from 10.4 to 4.9 per cent., and from 16.8 to 9.6 per cent. This decrease is to some extent due to public lectures.

The confidential letter to defaulters is also responsible for a number returning to the clinic.

Close co-operation between general practitioner and the V.D. specialist is most important, especially in view of the tendency to default at an early date after treatment with the sulphonamide derivatives.

Summary

Methods of reducing defaulters from V.D. treatment and of encouraging patients to attend the treatment centre are considered from the point of view of public lectures, communication with the defaulter, and co-operation between the V.D. officer and the general practitioner.

The results of the adoption of these measures at Leicester are given.

A detailed analysis of male defaulters at the Leicester V.D. centre follows.

Clinical Memoranda

Acute Duodenal Obstruction in a Boy of 8 due to Volvulus of "Volvulus Neonatorum" Type

The following case seems interesting and rare enough to warrant publication.

Case Report

A boy aged 8 was admitted to hospital as a case of suspected appendicitis on February 3, with the following history. On January 8 his doctor was called because he was suffering from abdominal pain and had vomited several times. When seen his pain was not severe, but his parents said he had been in agony during the night. They suggested the pain was due to the fact that he had been to a children's party two days before and had eaten a quantity of nuts. There was no abdominal tenderness, and the boy soon felt better. On January 25 he again vomited twice, but made no complaint of pain. On January 28 he had violent abdominal pains in the night and vomited many times, the vomit being at first yellow and later green. He recovered, but had another attack on January 31. On February 2 his doctor was again called as the boy had pain in the night. When seen he was not distressed and his pulse and temperature were normal, as they had been in the previous attacks. On February 3 his pulse rate rose to 110, he was tender over the appendix area, and he was sent into hospital.

When I first saw him in hospital he was lying comfortably in bed without any pain. His abdomen was somewhat distended, but there was no tenderness, the temperature was 99.2°, and the pulse 104. There was no tenderness on rectal examination. Two hours later the clinical picture was entirely different; the child was in extreme agony, crawling over the bed on all fours, screaming with pain, and rubbing his umbilical region. It was quite impossible to examine him; he was vomiting large quantities of dark green fluid. Although I could not make a definite diagnosis, his symptoms were so urgent that I decided to operate at once.

Under general anaesthesia the abdomen was opened through a paramedian incision. The whole of the small intestine below the duodenum was found to be completely collapsed and empty. The appendix was 8 inches long, but otherwise normal. There was a Meckel's diverticulum 4 inches long and the thickness of a little finger. This was causing no trouble but was removed. The stomach and duodenum were hugely dilated as far as the crossing of the superior mesenteric vessels over the third part of the duodenum. The caecum and the hepatic and splenic flexures of the colon were unduly low in position and provided with a mesentery. The rotation of the gut, however, had been normal to the extent of the caecum being on the right side, although proper fixation had not occurred. Two or three coils of small intestine were encircling the caecum and ascending colon, and gentle traction on the proximal coil tightened these coils like a knot round the large gut. At this stage the patient became extremely cyanosed because vomiting occluded the air-way. The head of the table was tilted down about 30 degrees, a stomach tube was passed, and two pints of green fluid removed, the patient's condition improving immediately. It was now possible to unravel the knots in the intestine, chiefly by rotating the caecum in a clockwise direction. Normal saline was then poured into the peritoneal cavity and the abdomen closed. On the next day there was a certain amount of abdominal colic, which was relieved by eumydrine tablets. The bowels had not been opened for some days, so an enema was given; these had to be repeated at intervals for a month.

A rather stormy convalescence included chest infection, probably from aspirated stomach contents during the anaesthesia. This was treated by sulphapyridine, but the boy's tolerance to this drug was very poor; it soon caused vomiting, and had to be stopped. However, he gradually and steadily improved and was about to be discharged when, together with several other patients in the ward, he developed scarlet fever. This was his final setback, and he was last seen walking about the town looking happy and well.

There have been no abdominal symptoms since the operation was performed some months ago, and I hope, perhaps fondly, that there was enough peritoneal reaction at the site of the volvulus to cause fixation of the ascending colon and so prevent recurrence of the condition. A barium meal and *x*-ray investigation subsequent to the operation showed no abnormality except the low position of the hepatic and splenic flexures of the colon.

The interesting aspects of the case are: (1) The "volvulus neonatorum" syndrome occurring at the age of 8. (2) The complete collapse of the whole of the small gut, including that taking part in the volvulus. This collapse was due to the obstruction of the third part of the duodenum by the twisting and traction of the "duodeno-colic isthmus." (3) The occurrence of several acute attacks with symptomatic recovery between them. (4) The agonizing pain caused by the condition, which was commented on by all who saw the boy during an attack, yet half an hour later there would be very little abnormality to observe.

HERBERT PEARSE, M.D., M.R.C.S.,
Honorary Assistant Surgeon, Taunton and
Somerset Hospital.

Reviews

ABDOMINAL INJURIES IN WAR

The Abdominal Injuries of Warfare. By Gordon Gordon-Taylor, O.B.E., M.A., F.R.C.S., F.R.A.C.S. (Hon.). (Pp. 88; 68 illustrations. 10s. 6d. net.) Bristol: John Wright and Sons; London: Simpkin Marshall. 1939.

This little volume might be described as an illustrated guide to the specimens of abdominal injuries in the war collection at the Royal College of Surgeons of England. Developed after the last war and consisting of specimens supplied personally by surgeons engaged in the field, the collection is unique, and no more opportune time could have been chosen for its description. The value of this description is, however, enhanced by its authorship. Mr. Gordon-Taylor devoted a large period of his war service to a casualty clearing station, so that he speaks from first-hand and most intimate knowledge of his subject. Moreover, many of the cases described were either under his own care or under that of surgeons with whom he was in intimate contact, and this gives to his observations an interest and an importance which are quite exceptional.

In spite of its brevity the volume covers every field of abdominal injury, although of necessity the greater part is devoted to injuries of the intestine. The illustrations throughout are superb, as one might expect from the hands of Mr. Thornton Shiells. The descriptions are brief and concise, and are illuminated by the penetrating observations of the author. In the short space of a review it is impossible to give any adequate idea of the value of the book, and we can only say that we hope that no surgeon will attempt to deal with these injuries until he has read and re-read this volume and has grasped the amazing results which may be obtained in the most desperate conditions by daring surgery. Mr. Gordon-Taylor has once again placed us in his debt.

INCIDENCE OF PEPTIC ULCER

Studies on the Changing Incidence of Peptic Ulcer of the Stomach and Duodenum. By Gunnar Alsted, M.D. With a preface by Professor E. Meulengracht. (Pp. 148; 12 figures; 22 tables. 10s.) Copenhagen: Einar Munksgaard. London: Oxford University Press. 1939.

Recent observations have led to the belief that signs of active or former peptic ulcer are found in between 5 and 20 per cent. of necropsies. The consensus of clinical opinion is that peptic ulcer occurs more often than it did, but this clinically observed increase may be due in part to an improved diagnostic technique. Though we have no certain information as to the changes there may have been in the incidence of peptic ulcer, the ratio of cases of duodenal ulcer to cases of gastric ulcer has certainly undergone a remarkable change during the last hundred years. The older statistics showed that gastric ulcer occurred ten or more times as often as duodenal ulcer, in marked contrast with the present day, when duodenal ulcer occurs four to six times as often as gastric ulcer. Moreover, in the course of the last fifty or sixty years a change has taken place in the sex incidence of peptic ulcer, in that towards the close of the last century the proportion of men to women affected was 1:5 or 1:6, whereas since the war the proportion has been more like 3:1.

In searching for an explanation of these facts Dr. Gunnar Alsted has drawn on the records of the hospitals of Copenhagen, especially the Bispebjerg Hospital, and has brought his results together in a small volume with an introduction by his chief, Professor Meulengracht. Haemorrhage causing haematemesis or melaena, or both, is a striking symptom in 10 to 30 per cent. of cases of peptic ulcer, and, since 80 per cent. or more of manifest haemorrhages are caused by ulcer, it is significant that Dr. Alsted finds the change in the sex incidence of peptic ulcer reflected in cases admitted to hospital on account of manifest haemorrhage. In the statistics from Denmark and abroad the same proportion of men to women as is given by the pathologists and the clinicians from other points of view holds good—that is, since the end of last century the sex ratio has changed from 1:3 to 2:1 or 3:1. Since these gastric haemorrhages are so conspicuous and have probably always manifested themselves in the same way, and resulted almost always in removal of the patient to a hospital, either immediately or after a short space of time, Alsted feels justified in using the statistics of the Copenhagen hospitals to throw light on his problem. On the basis of the annual returns of the hospitals it is shown that in the course of years—from 1876 to 1935—an increase in the number of these cases has taken place which is much greater than would correspond to the growth of the population. The increase applies both to men and to women, but is most pronounced for men.

This rise in the frequency of such haemorrhages in males turns out to be due partly to improvements in diagnosis and partly to the rapidly increasing number of readmissions. The frequency of fresh ulcers has not changed in the course of years, hence the real decrease in the incidence of ulcer in female patients is appreciable. Observations on the incidence of peptic ulcer in other countries and on the incidence of haemorrhage in the Copenhagen hospitals, and the results of a detailed investigation of the cases admitted to one department of the Bispebjerg Hospital over a period of years, confirm Dr. Alsted's opinion that the supposed increase in the frequency of peptic ulcer is exclusively due to an improved diagnostic technique and a growing number of re-admissions. In women there has actually been a great decrease in the frequency of ulcer, and this is the real cause of the change in the ratio of males to females found everywhere. The author also points out that clinical manifestations of peptic ulcer have changed considerably in the course of the last fifty to sixty years. Previously an acute disease, it is now predominantly chronic, and, while formerly localized principally to the body of the stomach, its seat is now commonly the duodenum.

VITAMIN C AND TUBERCULOSIS

Ascorbinsaeurestudien an Gesunden und Tuberkulosekranken. By H. Dagulf. (Pp. 195; 26 figures; 37 tables. No price given.) Göteborg: Elanders Boktryckeri Aktiebolag. 1939.

An appreciable literature is accumulating on the relations of vitamin C and tuberculosis in both the experimental and clinical fields, with conclusions that are conflicting. It is therefore not surprising that the therapeutist is still waiting for an authoritative lead. Dr. Dagulf's monograph, giving a review of past work and his personal investigations, impresses us as a readable, concise, and unbiased presentation of the whole subject. In the first part of the book the author reviews the history of ascorbic acid, methods of determination, and functions. In a chapter on "Ascorbic Acid and Infections" he concludes that the exact part played by vitamin C in relation to infections is not yet clear, and also that it has not yet been established that there are any connexions between vitamin C and tuberculosis. In the last chapter of this part of the book are briefly reviewed other aspects of vitamin C—its relation to blood diseases, digestion, and the specialties of obstetrics, gynaecology, paediatrics, ophthalmology, etc.

In the second part of the book the author describes his own clinical investigations. Contrary to results previously reported, the method of determining the capillary resistance is not a trustworthy clinical test of the vitamin C state in extrapulmonary tuberculosis. Saturation and other tests, however, showed that in this form of the disease the vitamin C saturation was lower than in healthy individuals on a similar diet. Determination of ascorbic acid in the blood also showed decidedly lower figures in the tuberculous than in healthy people. The chief cause for the lower standards in the tuberculous is, according to the author, to be found in the low vitamin C content of their diet. He maintains, moreover, that the ill effects of hypovitaminosis C have been exaggerated. There may be indications for vitamin C therapy in tuberculosis, but they are narrow and their limits are still to be determined.

The monograph concludes with a bibliography of nearly a thousand references.

APPLIED GENETICS

Genetics and the Clinician. By Lindsay Ride, M.A., B.M., B.Ch., M.R.C.S., L.R.C.P. (Pp. 146; 25 figures; 11 tables. 10s. 6d. net.) Bristol: John Wright. London: Simpkin Marshall. 1939.

The author of this book is professor of physiology at the University of Hong Kong and for a number of years has been carrying out investigations on hereditary characteristics, both morphological and physiological, exhibited by several Eastern races. His studies have led him, he states, to a realization of the importance of genetics in human biology and of the need for raising the average level of knowledge among members of the medical profession. He writes as an enthusiast concerned to show the clinician that genetics has a fundamental contribution to make, and, furthermore, that that contribution can be made now and not merely at some future time.

Professor Ride is careful to point out that his book—a very short one—is not intended to be a textbook. He explains that it is a combination of a thesis written some years ago and a university course on human genetics, together with a few additional chapters; this gives the book the character of a series of essays. The preface is dated June, 1936, and this (unless 1936 is a misprint for 1938) explains what would otherwise seem to be serious omissions. Professor Ride was unfortunate in the time chosen to write his book; had he waited for a couple of years he could have added an account of some of the most impressive advances yet made in human genetics—for example, the demonstration of genetic linkage in man, of partial sex linkage, and the estimation of the mutation rate of two or three human genes. If he were writing at the present time he could make out an even stronger case than the one he has so forcibly presented.

It is easy to select a number of features worthy of favourable notice: the chapter on "Heredity and Environment in Medicine" is particularly constructive and helpful; the criticism of those who airily dispose of the evidence pointing to heredity as a factor of importance in the causation of cancer is trenchant and to the point; there are valuable lists of references; the long glossary is truly excellent. Professor Ride states that his modest aim is "to convince a portion of practising clinicians—no matter how small—of the value of applied genetics." He will undoubtedly achieve it.

CHRONIC ARTHRITIS

Chronic Arthritis. By Robert T. Monroe, A.B., M.D. Edited by Henry A. Christian, A.M., M.D., LL.D., Sc.D. (Pp. 84. 8s. 6d. net.) London: Oxford University Press. 1939.

This book furnishes a further addition to the already voluminous literature on the subject, but its practical outlook and sound teaching will appeal to all who are interested in the management of this difficult problem. The American nomenclature is used, and three types of chronic arthritis are described, atrophic and hypertrophic arthritis and the periarticular forms of fibrositis, which include many of the occupational types of "rheumatism," though trauma is named as the most clearly recognized cause of hypertrophic arthritis and is associated with defects of posture which are often occupational. Aetiology is fully dealt with from all aspects in a manner indicating sound judgment and common sense, and the relation between cause and treatment is kept clearly in view. The difference between weather and climate is recognized, which is unusual; the author remarks, "Fortunately a good climate is only a luxury in the treatment of arthritis. Most patients recover in their native atmosphere if they have the determination and the proper care." Terse and striking statements and descriptions of this type are numerous and add to the pleasure of reading the book. The influence of nerve fatigue in arthritis, both atrophic and hypertrophic, is fully dealt with; too often it is overlooked in the latter.

The pathology and clinical features of the different forms are fully described, but the absence of illustrations detracts from the value of the section on *x*-ray appearances. The general arrangement is rather confusing, though it has the advantage of showing the relation of the different types.

Notes on Books

A few years ago irreverent youth amused itself with a game wherein one travelled on top of a bus in London with a companion, to whom he gave with great assurance, and in a loud voice, grossly misleading information, as, for instance, that Madame Tussaud's was the Bank of England, or St. Thomas's Hospital was the B.B.C. When a stranger could be induced to volunteer a correction of the error, that counted one point to the "server," who then became "striker" to his friend's "service." There is some ground for a suspicion that the author of *Doctor—Here's Your Hat* (Cape, 10s. 6d.) is trying to play this game on his readers and his reviewer. To begin with, Dr. **Joseph A. Jerger** makes the statement that his father's occupation involved buying—not prospecting for—diamonds in South Africa for Cecil Rhodes during the 'nineties. If one suggested that selling scuttlefuls of coal to a Wallsend colliery would be just as profitable, Dr. Jerger would no doubt reply, "Fifteen—love." Then we find him landing at Capetown a few days after the outbreak of the Boer War and taking a train for the Transvaal at a date when no railway trains could possibly get within several hundred miles of that State—"Thirty—love." He then buys a camel ("Forty—love") and sets off on it across the veld; contracts typhoid fever, and regains consciousness in a hospital at Capetown—civil or military not stated—where arrangements are made to send his body to Australia if he should die. We give

Dr. Jerger best: game, set, and match to him. After this promising beginning he develops his real thesis, that (in the U.S.A.) there is too much specialization and not enough respect paid to the general practitioner. Incidentally, his account of his medical studies in America makes one wonder, not that there should be an occasional incompetent doctor over there, but that there should be an occasional competent one. His professional autobiography is full of amusing yarns; but how much of it is a leg-pull, on the pattern of the opening pages, passes the wit of at least one Englishman to guess. It is to be hoped, at any rate, that he is overstating his case when he declares that three-fifths of the recruits inspected for the U.S.A. Army during the war were infected with venereal disease.

The fact that a second edition of *Bacteria in Relation to the Milk Supply* by C. H. CHALMERS (Arnold, 6s.) has been called for within four years shows that this little work is filling a useful place in the field of dairy bacteriology. Substantial alterations have been introduced into the new edition so as to deal more fully with such subjects as the methylene-blue reduction and the phosphatase tests. It may be noted that the temperature at which the water-bath used in the official method of performing the methylene-blue reduction test is given erroneously as 37° ± 0.5°; the correct figure is 37.5° ± 0.5°C. Similarly the preparation of the control tubes differs from that laid down in the official order. The section on water examinations is based on the original edition of the Ministry of Health's Report No. 71. A new edition of this report, which readers by Chalmers's work would do well to consult, has just been published in which considerable alterations are recommended. Incidentally, Fildes spells his name with an "s."

Poisonous Plants of the United States by Professor W. C. MUENSCHER is a volume in a series on rural science which covers a wide variety of aspects of agriculture. The author classifies the poisonous plants in two main groups: those which are poisonous under all conditions and those which are poisonous under special conditions. The second group is of considerable medical interest. It includes the plants causing dermatitis (about 100 listed), those causing photosensitization, and cyanogenetic plants, etc. In this connexion a relatively new danger has been recognized: certain plants can absorb selenium compounds in large enough quantities to make them poisonous to animals, and this has been established as the cause of "alkali disease" and "blind staggers" in cattle and horses in areas where seleniferous Cretaceous or Eocene shales occur. The main part of the volume consists of a description of poisonous plants classified according to their natural orders, and the text is followed by ten pages of references. In general the volume gives a brief but competent account of a subject which is of primary importance to agriculture and also presents many problems of general pharmacological interest. It is published by Macmillan at 15s.

Volume III of *Thorpe's Dictionary of Applied Chemistry* (fourth edition) covers subjects from Chemical Calculation to Diffusion. It is published by Longmans, Green and Company at 63s. A considerable proportion of the volume deals with subjects of medical interest—for example, chloroform, choline compounds, cinchona alkaloids, cocaine, cod-liver oil, creatinine. The article on cod-liver oil deserves special mention, for it gives a particularly clear account of the history, preparation, and properties of this drug. Chemical warfare and chemical warfare defence are two subjects of topical interest that together occupy sixteen pages. Some interesting facts mentioned are that the content of gas as per cent. of total weight is about 50 in the case of air bombs as compared with 10 in the case of shells. About fifty different compounds are described. The most potent toxic agent appears to be diphenyl cyanoarsine, which is used in the form of a smoke and acts as a lung irritant in a concentration of one part in 170 millions. In relation to chemical defence it is mentioned that activated charcoal is still the basic constituent of most respirators, but the introduction of smokes has called for the addition of a filtering mechanism.

May's Chemistry of Synthetic Drugs first appeared thirty years ago and has now reached its fourth edition (Longmans, Green, 21s.). It is seventeen years since the third edition was published and the text has been almost completely rewritten by Dr. PERCY MAY and Dr. MALCOLM DYSON. The new volume includes synthetic vitamins and endocrines. Though the number of new synthetic drugs which are introduced into clinical practice is large it represents a very small proportion of the total number of compounds investigated, and this volume, which is of moderate size (370 pages), only covers a small part of the field. The material has, however, been selected with care, and the authors give an interesting survey of an important and rapidly advancing subject.

Writing on *Le Syndrome "Hémorragie du Nouveau-Né"* (Masson, 26 fr.), Dr. H. JAHIER has allowed himself to be influenced too much by his medical teachers' views on congenital syphilis, for he spoils an otherwise excellent monograph on an important and interesting subject by concluding that this infection is the only complete explanation for the various manifestations of the syndrome. Fortunately he still believes that the supply of adult blood to the infant constitutes the essential part of treatment, although his choice of the longitudinal sinus, approached at the site of the posterior fontanelle, will not commend itself to workers in other countries, who find the majority of infants with this malady are cured by intramuscular injection.

Die Eiweisskörper des Blutplasmas, edited by Drs. H. BENNHOLD, E. KYLIN, and Professor RUSZNYAK, is published by Theodor Steinkopff. It contains articles by various authors from Germany, Hungary, Sweden and Denmark. The first half of the volume deals with the physical chemistry and biochemistry of the proteins of blood plasma and the second half with chemical problems. Professor Rusznyak gives a short but clear survey of the difficult problems associated with oedema. He shows that lowering of the colloid osmotic pressure of the serum is one important factor in the production of this complex condition. The volume concludes with a general review by Dr. E. Kylin of the clinical importance of plasma proteins. He explains that the present work is in the nature of a survey of existing knowledge, and has been compiled with the intention of stimulating and assisting further research in this very difficult but important field.

Preparations and Appliances

POLYVALENT VITAMIN CONCENTRATE

Abecedin (Messrs. H. R. Napp Ltd.) is the name of preparations containing vitamins A, B_1, B_2, C, and D_3. This mixture is supplied in tablets and as an emulsion.

Polyvalent vitamin concentrates provide a very convenient method for the prevention or treatment of vitamin deficiency. The chief difficulty is to produce such mixtures in a stable form. The vendors state that control specimens of their tablets showed no appreciable deterioration in vitamin content after storage for two years. They point out that this applies to unopened packages, and that deterioration by air contact may occur after the bottle has been opened.

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THE PURSUIT OF LONGEVITY

The will to live, the quest for longevity, is the most deeply rooted and persistent of the biological characteristics of protoplasm organized into human individuals. In one of the lectures before the New York Academy of Medicine, published in a recent collection,[1] Professor Raymond Pearl points out that though at the beginning of each person's life this urge to survival is wholly unconscious—just a part of living like digestion or respiration—later on this underlying protoplasmic will to live, the vital momentum, is supplemented in the individual by a conscious search for longevity. Virtually all who live to seventy years and upwards think of little else but about what they should do to preserve their health so that they may keep on living longer. The octogenarian or nonagenarian may be in wretched health and altogether having a bad time of it, but even so his normal instincts are for keeping on. For the consideration of the chances of survival of an individual, and of the means by which these may be increased, statistical methods of examination of life tables are used. Professor Pearl illustrates the function of survivorship of individuals of various ages in the form of a ladder of life, broad based and tapering at the top to which the individual is trying to attain. By comparison of present-day statistics with the life tables of the United States at the end of last century two interesting facts emerge. In the last fifty years or so the prospects for duration of the journey of life have much improved; but it is the average duration of life that has been altered, and this has been accomplished through progress in medicine and improvement in the public health, chiefly in the lowest of first ten-year period. In 1890 only 72 per cent. of boy babies in the United States reached ten years of age; now 91 per cent. do. The span of human life has not been altered, however, and there is no present prospect that it soon will be. Because more get over the early and very difficult stages, absolutely more survive at later ages; but those who attain the age of seventy now actually do not do so well relatively, on the average, in the way of further survival to still higher ages as did the stalwarts of 1890.

The problem of the search for longevity involves attempting to answer the question why it is that some individuals alive at any given age will live thereafter longer than others. The shrewd general impression of a wise physician who spent his own life in a region where longevity was a common phenomenon, Dr. Oliver Wendell Holmes, is summed up in the often-quoted assertion that if one is setting out to achieve threescore years and twenty, the first thing to be done, some years before birth, is to advertise for a couple of parents both belonging to long-lived families. Professor Pearl is able to support this impression by the results of exact quantitative investigation. From these it emerges that people who live to a great age have immediate ancestors (parents and grandparents) who are on the average definitely longer lived than the corresponding ancestors of the general run of the population; and, further, this hereditary influence promoting longevity is between two and three times as great relatively for parents as it is for grandparents. The importance of inheritance is emphasized by comparing statistics of long-lived as against short-lived children and finding that the long-lived children had fathers who lived much longer than the fathers of short-lived children. Corresponding life tables for mothers tell the same sort of story. Further, in another series the expectation of life of the sons of fathers who died young is less than that of the sons of moderately long-lived fathers and still less than that of the sons of extremely long-lived fathers.

Besides the inherited biological constitution of each individual, which is one of the major factors in the probable length of life of the person and which appears to be associated with a number of structural and physiological characteristics that are being slowly determined, there must of course be environmental aspects of the picture. The factors of use of alcoholic beverages and of tobacco have been investigated. One of Professor Pearl's studies published in 1926 led to the conclusion that moderate drinking does not significantly shorten life when compared with total abstention from alcohol, while heavy drinking does seriously diminish the length of life. And as a result of a hitherto unpublished series of investigations of a group of nearly 7,000 men the conclusion is reached that smoking tobacco is definitely associated with an impairment of life duration, and that the amount or degree of this impairment increased as the habitual amount of smoking increased. Further statistics appear to throw light on the question whether hard physical labour tends to shorten life. Apparently before the age of forty is attained it makes no difference in the rate of mortality whether the occupation involves light or physical labour. After roughly the age of 40–45 it seems that a man shortens his life by definite amounts in proportion as he performs physically heavy labour.

The literature of longevity is full of advice, recipes, and precepts for the attainment of length of days.

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[1] *Landmarks in Medicine. Laity Lectures of the New York Academy of Medicine.* By various contributors. Introduction by James Alexander Miller, M.D. London: D. Appleton-Century Company. (8s. 6d.)

Reviewing the professor's figures in order to seek some broad generalization for individual guidance, in only one outstanding respect besides great longevity did the long lives differ from the rest of mankind on the whole. That is in the fact that a vast majority of these extremely old folk were of a placid temperament, not given to worry: they had taken life at an even, unhurried pace. For a variety of forms—including plants, various lower animals, insects, and men—the length of life is generally in inverse proportion to the rate of living.

RURAL HEALTH ORGANIZATION

The League of Nations had arranged for a European Conference on Rural Life to be held at Geneva in October this year. In preparation for this the League prepared a number of publications in pamphlet or booklet form described as "general technical documentary material." Among them are several which deal with nutrition and rural housing, and two which have a direct and important bearing upon medical services. One is a *General Survey of Medico-social Policy in Rural Areas*, issued by the League's Health Organization,[1] and the other deals with *Sickness Insurance and Rural Medical Assistance*, and is issued by the International Labour Office.[2] The two documents are closely connected one with the other, and they contain information and conclusions of great interest to all who have any concern with social medicine. Many of the facts set out and problems discussed have to do with medical organization and services in general, and not merely with those of rural areas; but it is made clear that the circumstances of rural and agricultural populations give rise to peculiar needs, require special adaptations, and certainly call for the provision of health and medical services to no less extent than that now so widely given to industrial communities. This is true even of England, Belgium, and Holland, where the population lives mainly in towns, and of Switzerland and the Scandinavian countries, where the peasant population represents a larger proportion but where farms and rural dwellings have, speaking generally, modern equipment. Still more is this the case in other countries, including parts of Scotland, France, and Germany, where there is a relatively large but scattered agricultural people farming along traditional lines.

It is satisfactory to discover from a survey which includes all these varying conditions that the provision of health services and medical care now established in Great Britain is, so far as it extends, second to none in quality and effectiveness, and that the proposals made by the British Medical Association in its scheme for a General Medical Service for the Nation are almost exactly those which international experience and thought indicate as the most suitable and efficient, and this not merely in regard to the nature of the professional service but also in regard to the main executive and financial arrangements suggested for its administration. Adaptability to local conditions within reasonable limits must be an essential feature of all such schemes. It is possible, within Great Britain, that the conditions in England and Wales on the one hand and Scotland on the other differ sufficiently to make somewhat diverse administrative, or even financial, arrangements advisable. Indeed, at present, as is well known, there are two different systems of medical provision operating within Scotland itself. In some countries it has been found possible to include hospital provision within an insurance scheme; with us such provision has developed, and is developing, on different lines, which seem to prevent such inclusion but allow of a very close association being formed with other medical services in accordance with the B.M.A. plan. Consultant and specialist services are evidently best supplied along with institutional care. In some countries, too, "insurance institutes" (an analogue of our "approved societies" but by no means identical therewith) have been given fairly wide powers in relation to public health, whereas here we shall no doubt continue to look to local health authorities for this purpose. But as to the best method of financing and arranging the collective organization of medical care the Health and Labour Offices of the League of Nations have no doubt. The insurance method has pronounced advantages over any other, including that of entrusting it to practitioners appointed and paid by public authorities; and of the several kinds of insurance schemes that of compulsory sickness insurance for wage earners, their families, and others of similar economic position is to be preferred. It is the scheme which has been most commonly adopted and is working well.

Two other conclusions may well be noted. One is the essential value of properly conducted popular education in health. The other is the need for training the medical profession for the accomplishment of its preventive and social duties. A well-expressed paragraph on this matter is worthy of quotation:

> "Doctors who have been practising for twenty years or more have only received training in the purely technical aspects of hygiene. Although the scope of instruction has been broadened, it remains true that faculties of medicine, the medical press, medical associations, and the profession itself still concentrate on laboratory research, refinements of diagnosis, and new methods of treatment. The preventive and social aspects of medicine are no longer ignored, but little more is done than to make passing reference to them. They still do not permeate teaching nor figure prominently in university examinations, press articles, papers read to learned societies, or debates in

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[1] *General Survey of Medico-social Policy in Rural Areas*. Prepared under the auspices of the Health Committee. Series of League of Nations Publications. European Conference on Rural Life, 13. London: Allen and Unwin. (1s.)

[2] *Sickness Insurance and Rural Medical Assistance*. Prepared by the International Labour Office. European Conference on Rural Life, 15. London: Allen and Unwin. (9d.)

professional circles. At the same time it is being realized that doctors have to concern themselves not only with the fate of sick persons but also in that of the community as a whole. Medical students must therefore be given a better understanding of their future preventive and social duties, while practitioners should be brought to realize that they represent the main line of defence of the health of the community."

THERAPEUTIC REQUIREMENTS IN WAR

Before the outbreak of war large stocks of drugs and therapeutic substances had been accumulated in this country, and the arrangements made by the Government are designed to secure that these stocks should be augmented as required. The British Pharmacopoeia Commission is already engaged upon modifications of the formulae of the *British Pharmacoepia* to meet the exigencies of war time, and subsequently revisions may be expected of the *British Pharmaceutical Codex* and the *National Formulary* for national health insurance purposes. In the meanwhile, owing to the strain imposed upon medical services and the country by the outbreak of war, the utmost economy is necessary in the prescription of drugs. As briefly announced in our last issue, the Medical Research Council, at the invitation of the Ministry of Health, has formed a Therapeutic Requirements Subcommittee to advise the Ministry and the medical and the pharmaceutical professions on matters relating to economy in the use of drugs. Where several variants of a particular drug are known, or where there are several remedies for a particular disease, it may be desirable, on grounds of economy, to concentrate upon the manufacture of a single preparation or compound. The raw materials which go to the making of many therapeutic substances are imported from abroad. In the case of other substances supplies available for the medical profession may be diminished by reason of an abnormal demand from other essential services. The newly appointed subcommittee will endeavour to ensure the most effective and most economical use of drugs and therapeutic substances, bearing in mind these and other considerations. The full co-operation of all medical practitioners is needed in order to prevent waste in dispensing. All communications with regard to the work of the Therapeutic Requirements Subcommittee should be addressed to Dr. C. H. Hampshire, 44, Hallam Street, London, W.1.

CHEMOTHERAPY OF MALARIA

Contributions to the already extensive literature on the control and treatment of malaria by drugs appear with increasing frequency, and demonstrate the clinical research which is going on continuously among workers in tropical medicine. Just over a year ago we discussed in these columns[1] the findings reported by the Health Organization of the League of Nations,[2] and the broad conclusion was that there was no drug which was capable of acting as a certain and practical causal prophylactic agent against malaria. Field,[3] from the Federated Malay States, confirms that this is still the general position, but his work and that of others indicate that although the chemotherapeutic control of malaria is not yet in sight, the signs are by no means discouraging. Sinton, Hulton, and Shute[4] have shown that sulphanilamide is capable experimentally of preventing infection with *P. falciparum,* but although this is of considerable chemotherapeutic interest it has, as yet, no direct practical application. Plasmoquine, which is peculiarly lethal to sporozoites, can only act as a prophylactic in doses bordering on the toxic. This does not mean that all drug treatment aimed at preventing malaria is necessarily useless, although Field appears to doubt whether under the conditions obtaining in Malaya any adequate form of mass chemoprophylaxis is feasible. Atebrin prophylaxis gives more effective control of malaria than does quinine, but the continuous administration of atebrin is hardly justifiable until more is known of its ultimate effects on the human system. Quinine appears to be without serious side effects, but its regular daily administration to large population groups in Malaya is difficult to organize, and it is less effective when given at greater intervals. On the other hand, in Italy and Algeria quinine prophylaxis is regarded as a malarial control measure of great practical utility. Although experience attests to the prophylactic effect of quinine or atebrin, under suitable conditions, in preventing infections reaching a level where clinical symptoms are produced, such infections are not necessarily eradicated, as is shown by the rise in parasite rate and by the fever which follows withdrawal of the drugs. For the treatment of the acute attacks quinine or atebrin are the drugs of choice; the daily administration of 2 grammes of quinine or 0.3 gramme of atebrin in three divided doses suffices to clear the parasites within a few days, but unfortunately relapses are not infrequent. Plasmoquine, however, which is of little value itself in the actual control of the acute attack, is said to diminish the incidence of relapse when associated with the quinine or atebrin treatment, and it is also an effective gametocidal agent against the crescents of *P. falciparum,* which are relatively unaffected by the other two drugs. Smith,[5] Lipscomb,[6] and Boyd[7] recently drew attention to the effect of plasmoquine combined with atebrin in diminishing relapses. In 1934 the Malaria Treatment Centre at Kasauli, to which were sent the recurrently relapsing cases of malaria, was closed for want of material, and Boyd attributed this result to the effect of plasmoquine treatment. On the other hand, Whittingham[8] stated that, although it was agreed that the new synthetic drugs reduced the relapse rate, the low rates observed by Smith, Lipscomb, and Boyd were only true up to a period of about three months after treatment was started, and that if the patients were watched for longer periods 20 to 25 per cent. relapsed. In practice Field appear to prefer to give plasmoquine after the other drugs, and while most will agree with this in the case of atebrin, many use quinine and plasmoquine simultaneously, as this shortens the course of treatment and appears to be without undue danger from increased toxic effects. The remarkable activity of the sulphonamide compounds in bacterial infections naturally leads to their being tried against other organisms, but so far as human malaria is concerned Niven's[9] conclusion concerning prontosil appears sound—namely, that although it had some lethal action on malarial parasites, especially *P. falciparum*, it had no place in the practical treatment of malaria owing to its low efficiency, possible toxicity, and relatively high cost. On *P. knowlesi*, however, a parasite of simian malaria, sulphonamide compounds — namely, soluseptasine, prontosil, and particularly sulphapyridine—have a remarkable action, as shown by Chopra and Das Gupta.[10] [11] [12] A number of other dissimilar compounds are capable of exerting some therapeutic effect in malaria. The action of arsenobenzol against *P. vivax* is well known, and Glyn-Hughes, Lourie, and Yorke[13] have shown this same infection to be susceptible to the action of undecane diamidine.

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[1] *British Medical Journal,* 1938, 2, 227.
[2] *Bull. Hlth. Org. L.o.N.,* 1937, 6, 895.
[3] *Bull. Inst. med. Res.,* F.M.S., 1938, No. 2.
[4] *Ann. Trop. Med. Parasit.,* 1939, **33**, 37.
[5] *Proc. roy. Soc. Med.,* 1939, **32**, 1077.
[6] Ibid., 1082.
[7] Ibid., 1085.
[8] Ibid., 1085.

THE MECHANISM OF DIABETES INSIPIDUS

The association of the hypothalamus and the pituitary gland with the control of water metabolism has been shown by the study of pathological material obtained from cases of diabetes insipidus in man and the production of the syndrome in experimental animals. The control of the enormous polyuria in human beings by injections of pituitrin is paralleled by the similar control secured in experimental polyurias. The existence of an antidiuretic substance or hormone in the posterior pituitary is well established, but the precise mechanism responsible for the diuresis itself is not clear. There is evidence that the anterior pituitary must somehow be involved and also that it possesses a diuretic substance. The importance of the anterior pituitary in this connexion was first emphasized by von Hann over twenty years ago. It has always been significant that, whereas removal of the posterior lobe leads to polyuria, lasting polyuria never follows total hypophysectomy. In a recent paper Biggart and Alexander[14] report a series of experiments on diabetes insipidus induced in dogs. Small localized lesions 1 to 2 mm. in diameter were carefully produced with the diathermy needle in selected regions of the hypothalamus. Out of forty-nine animals thus treated, fourteen died as a result of the operation, thirteen developed a transitory post-operative polyuria, fourteen developed a condition of experimental diabetes insipidus, and six showed no change in urinary output. Detailed histological study of the lesions showed that if they were unilateral no polyuria resulted. The effective lesions were bilateral and in the anterior hypothalamus, the supra-orbital nuclei were destroyed, and in the majority of cases the lesions were so placed that any fibres running from the nuclei paraventriculares to the supra-optic nuclei were severed. As a result of the lesions the posterior lobe became atrophied, but the pars intermedia and the anterior lobe were not affected. The polyuria produced by these hypothalamic lesions was complex and had three distinct phases: a primary phase of transient polyuria lasting from one to six days; a secondary phase of return to normal urinary output; and a final tertiary phase of persistent polyuria simulating diabetes insipidus lasting apparently indefinitely. The daily urinary output in the different phases was, in round figures: pre-operative 500 to 600 c.cm.; primary phase 1,500 to 3,500 c.cm.; secondary phase 500 to 600 c.cm.; tertiary 1,500 to 3,500 c.cm. In the tertiary phase of established polyuria the animals were quite healthy and there was no apparent reason why they should not have continued to old age. Injection of pituitrin in this phase invariably reduced the urinary output to normal, but the primary phase was unaccountably resistant to such treatment. Thyroid, in doses having no effect on the urinary output of normal dogs, increased the polyuria of the tertiary phase in all the cases except one in which there was a diminution. Neither eucortone nor oestrin had any definite effects on the polyuria, which is of interest in view of the known inhibitory action of oestrin on the gonadotrophic activity of the anterior lobe. A striking and persistent decrease in urinary excretion in the tertiary phase could be produced by hypophysectomy or pancreatectomy. It is apparent that the mechanism of experimental diabetes insipidus is very complex. The hypothalamus and posterior lobe of the pituitary must be regarded as a neuro-hormonal functional unit in respect of water metabolism, and the supra-optic tract would seem to constitute the motor secretory path for the control of the secretion of the antidiuretic factor. From the work of Ranson and his colleagues in America it may be concluded that the hypothalamic lesions lead to actual cessation of elaboration of the antidiuretic hormone. Though the tertiary phase of the experimental polyuria can be readily explained on these lines, the secondary and primary phases cannot. For the secondary phase it is possible to suppose that there is a liberation of the stores of antidiuretic hormone which are known to exist in the normal posterior lobe. Unfortunately for such a hypothesis removal of the posterior lobe and stalk has been followed by a latent period similar to that found after hypothalamic lesions, before establishment of the permanent polyuria. Still more difficult to understand is the primary phase, for this occurs at a time when there must be adequate amounts of antidiuretic hormone in the posterior lobe. This phase also is refractory to injections of pituitrin, which have been stated in some reports to increase the polyuria. Biggart and Alexander consider that this primary polyuria is unrelated to the effects of the permanent hypothalamic lesion of the tertiary phase, and that its mechanism is quite obscure. The primary phase is not due to effects from the anterior pituitary, because it occurs even after complete hypophysectomy; further, there are no direct nerve connexions from the hypothalamus to the anterior pituitary. The possibility that hypothalamic lesions and hypophysectomy may have some transitory direct effect upon renal function is not considered in the paper by Biggart and Alexander. Such a possibility may deserve study.

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[9] *Bull. Inst. med. Res.*, F.M.S., 1938, No. 4.
[10] *Ind, med. Gaz.*, 1938, **73**, 395.
[11] Ibid., 665.
[12] Ibid., 1939, **74**, 201.
[13] *Ann. trop. Med. Parasit.*, 1938, **32**, 103.
[14] *J. Path. Bact.*, 1939, **48**, 405.

LABELS FOR COSMETICS

They evidently take their cosmetics seriously in America. It has long been known that the trade in cosmetic preparations comes surprisingly high up the list of trades classified according to the magnitude of their annual turnover in the United States, and superficial inspection shows that its importance is growing with great rapidity in this country also. Vast sections of womankind, which a few years ago spent little or nothing on cosmetic preparations, now devote a considerable proportion of their weekly earnings to beauty culture, sometimes to the neglect, it is rumoured, of their meals. Here it is still practically unfettered by legislative regulation and manufacturers can make any claims they please for their products, and they take advantage of this licence by vaunting their ability in the therapeutic field. Common examples of this practice are lotions for the cure and prevention of blackheads, for the restoration of the growth and colour of the hair, for the eradication of wrinkles. Such claims are no longer permitted to the cosmetic manufacturer in the United States. It seems that a distinct line has now been drawn between the cosmetic care of the skin and its appendages and therapeutic measures. According to a leader in the *Journal of the American Medical Association* of September 2 legislation was passed in 1938 consisting of the Wheeler-Lea Act and a Food, Drug, and Cosmetic Act; these measures effectively regulate the trade in cosmetics. The Federal Trade Commission can now require a manufacturer to show cause for the claims he makes for his preparations. If such cause cannot be shown a "cease and desist" order can be issued to prevent such claims. For example, manufacturers are not allowed to use the word "non-allergic." This is because even the simplest preparation may be "allergenic," or, in plain language, irritating to susceptible persons. Manufacturers have also been notified that certain names and statements used on the labels of cosmetics are not permitted. Those who are accustomed to the go-as-you-please policy adopted in such matters in this country will be astonished at the strictness of the American regulations. It is forbidden to advertise depilatories for permanent removal of the hair, products represented as depilatories but which merely bleach the hair, hair growers or restorers, skin food, wrinkle eradicators, cosmetics represented as valuable because of their vitamin content, and many others which are the commonplaces of the advertising columns not only in the newspapers and fashion periodicals but also in Government publications such as the convenient stamp books issued by the Post Office, which are full of the advertisements of patent medicine vendors. One would have thought that official circles would have excluded advertisements of this nature from their publications, but such is not the case, and so far the British Medical Association has protested in vain. It is evident that in the U.S.A. either public opinion is in advance of this country in such matters or the authorities have determined to do more to protect the population against the wiles of the cosmetic manufacturer and their own credulity than our rulers are yet prepared to do in the British Isles.

OPHTHALMOLOGICAL MONOGRAPHS

Documenta Ophthalmologica[1] represents a welcome departure in ophthalmic literature. Ophthalmology is well served by its journals and has a rich textbook literature. It is otherwise with monographs on special aspects. Some periodicals like the *British Journal of Ophthalmology* and the *Acta Ophthalmologica* do indeed publish special supplements to overcome this defect, but the financial difficulties in bringing out monographs on subjects that have a limited interest are real. The first issue of the new venture is an ambitious effort to place monograph publications on the same basis as periodical literature with its wider appeal. It contains an excellent review on the process of light adaptation of the retina by Professor R. Granit of Helsingfors written in English. Dr. P. Baillart contributes an extensive discussion on the retinal circulation; Dr. A. Magitot supplies one on the symptomatology pathogenesis of glaucoma; Drs. Nordmann and Reiss deal with the chemico-physical aspect of cataract formation. These three contributions are in French. There are two articles written in German: one by Dr. F. P. Fischer of Utrecht, who deals with the water contents of the eye; and the other by Dr. P. Karrer of Zurich, who discusses the significance of carotinoids for the eye. The editor contributes an extensive discussion on the vitamins in ophthalmology in Italian. The scope of these articles is best indicated by the fact that their standard equals that of the best contributions to the well-known *Ergebnisse* published in German. The judicious mixture of clinical and academic material represented by these seven monographs is in itself a contribution to the postgraduate education of ophthalmologists. How thoroughly the subject-matter is reviewed may be gathered from the fact that the article on vitamins carries no fewer than 700 references to the literature. *Documenta Ophthalmologica* is promised in instalments of one each year, and we hope the war will not compel the publishers to break their word.

The George Alexander Gibson Lecture will be delivered before the Royal College of Physicians of Edinburgh by Dr. J. Crighton Bramwell, F.R.C.P., in the Hall of the College, 9, Queen Street, Edinburgh, on Tuesday, October 24, at 5 p.m. His subject is "Blood Pressure."

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[1] *Documenta Ophthalmologica—Syntheses Scientifiques d'Ophthalmologie.* Edited by A. Juhasz-Schaeffer. Volume I. 250 fr. Paris: Masson et Cie. Zurich: The Documenta Press.

WAR WOUNDS AND AIR RAID CASUALTIES

The following article is a supplement to the series of lectures on war wounds and air raid casualties printed in these columns

DETONATION OF HIGH EXPLOSIVE IN SHELL AND BOMB, AND ITS EFFECTS

BY

DAVID DALE LOGAN, D.S.O., M.D., F.R.F.P.S.G. D.P.H., M.I.M.E.

Lieutenant-Colonel, R.A.M.C. (Ret.)

PART I

In the official *Medical History of the War,* in order to show how little novelty there is in warfare and to point out that mining dates back to remote antiquity, I quoted an ancient historian who described the use of asphyxiating gas in mining at the Siege of Ambracia in the year 189 B.C. On that occasion the Aetolians filled jars with feathers. These feathers were then set on fire and the resulting smoke blown by bellows into the faces of the Romans. 189 B.C.! Yet the method adopted by the Germans more than a thousand years later was somewhat similar.

In France, in 1917, a group of collieries in the Bethune district was one of the few remaining fields in active operation. Although one of the collieries, Fosse 8, in this very important mine system was in enemy hands, and all the shaft heads and the mining villages of Annequin, Vermelles, Philosophe, etc., had been frequently shelled, the French had been able to continue working. At the height of the submarine menace, when there was an urgent demand for coal by the French, the Germans made a determined effort to stop production in these collieries. Unfortunately the French had delayed building off Fosse 8, which was still used as a downcast shaft. Great quantities of chloropicrin gas were thrown down this shaft. Powerful fans, the modern development of the bellows used by the Aetolians, were installed in one of the collieries. These carried the gas to all quarters of the system, killing many French miners who were at work, and also members of a British tunnelling company who were on guard. The gas was so concentrated as to render respirators useless.

Gas warfare, as it is understood to-day, is the natural evolution of the use of explosives and dates back to the sixteenth century, when gunpowder revolutionized warfare. With its introduction the possibilities of offensive mining in all phases of fortress warfare greatly increased. In the sixteenth and seventeenth centuries gas poisoning from the fumes of exploded gunpowder was of frequent occurrence.

Is Gas Warfare Inhuman ?

History shows that every new weapon has met with a hostile reception—inhuman, barbarous, unchivalrous, being common epithets to denounce their use. Among the vast majority of people in this country gas warfare is still regarded as the last word in barbarism. One reason, then, why the use of gas by the Germans raised such an outcry was that it was a new weapon against which there was no defence. It was, moreover, a weapon regarding which there was almost universal ignorance. Very few doctors in this country knew much about gas poisoning and the literature on the subject was very meagre. Everyone knows that by using it the Germans violated the agreement they signed at the Hague Congress in 1899. "The contracting Powers agree to abstain from the use of projectiles the object of which is the diffusion of asphyxiating or deleterious gases." I think it both instructive and interesting to recall a fact which is not nearly so well known: that the United States was one of the few Powers which did not sign that agreement. In my opinion, educated Americans have a better and more correct scientific knowledge and value of chemical warfare than the British. One of the reasons very properly brought forward by Admiral Mahan, the American delegate, was that the reproach of cruelty and perfidy addressed against the use of gas shells had also been uttered against firearms and torpedoes, although both were now employed without scruple. He insisted that

> "it was illogical and not demonstrably humane to be tender about asphyxiating men with gas when all were prepared to admit that it was allowable to blow the bottom out of an ironclad at midnight, thus throwing four or five hundred men into the sea to be choked by water, with scarcely the remotest chance of escape."

Those who have had much experience of gas warfare know that of all modern weapons it is the most humane, or, perhaps I should say, the least inhuman, as it causes the least amount of suffering, the smallest percentage of deaths, and by far the greatest percentage of complete recoveries. Proof of this may be obtained from the official medical histories issued by the various combatants in the great war and from standard works on gas and chemical warfare.

In 1937 the Representative Body of the British Medical Association passed the following resolution:

> "That this Meeting condemns unreservedly the use of poison gas in warfare as inhuman in its results and degrading to civilization, and relies upon the Council to do everything in its power with a view to securing the co-operation of the medical profession of all countries in order to prohibit the use of poison gas."

As no mention of high explosive shells or bombs was made, the use of these in modern warfare must be considered legitimate and humane. Those who were responsible must have been ignorant of the authoritative sources of information I have given. Perhaps they preferred the work of H. G. Wells. In his book *The Shape of Things to Come* there is the following description of gas warfare:

> "The tortures of gas were already many and various, and most of the mixtures then used left tormenting weakness in the system for the rest of life." Further on he declares that "gas warfare ranks in horror with the story of judicial torture or the story of ritual cannibalism, but its inhumanity is more striking because of its nearness to our time."

In his *History of the Next Hundred Years* he describes, most incorrectly, the effects of mustard gas.

> "It is doubtful if any of those affected by it were ever completely cured. Its maximum effect was rapid torture and death; its minimum, prolonged misery and an abbreviated life."

After I had finished reading the B.M.A. resolution I read in the daily newspaper that in Cleveland, U.S.A., forty constables dispersed with tear gas 600 strike pickets and their supporters! In France, as early as 1912, lacrimatory grenades had been used by the military in civil disturbances, and Prentiss, in his great work *Chemicals in War,* very pertinently points out:

> "No Government can be open to criticism for using against an invading army weapons already employed against its own unruly nationals" (p. 688).

Legitimate Gas Warfare

Few people realize that, with what might be termed the legitimate weapons of modern warfare in which explosives are used, many casualties from gas poisoning occur. During the great war thousands of casualties from gas poisoning were caused by shells, trench mortars, bombs, and aerial torpedoes bursting in deep trenches, dug-outs, cellars, concrete structures, and enclosed places, as well as in ships. Casualties from gas poisoning also occurred from mobile charges used to destroy dug-out systems, from bombs bursting in houses and flooding basements with gas, from the bursting of gas mains and pipes, and from many other causes.

Carbon monoxide was the most dangerous gas encountered in military mining. After a mine was exploded the galleries were filled with gas. In some cases this welled up the shafts and flooded the surrounding trenches, poisoning the occupants. Gas poisoning occurred in gun pits, in closed machine-gun emplacements, owing to the blow back, in tanks from leakage of exhaust, and from the use of coke braziers in cellars, dug-outs, and other confined places. As the official *Medical History of the War* properly states, in all these cases

> "the primary object for which the explosive was employed was its destructive effect, and it was to chance rather than to design that one must attribute the deadly effects of the fumes."

When the first Hague Conference was discussing the employment of projectiles, the sole use of which is the diffusion of asphyxiating or deleterious gases, it was pointed out that, when H.E. shells detonated, poisonous gases were generated which might cause death in confined areas. After discussion the Conference ruled that *if the splinter effect of a shell was greater than its noxious-gas effect, it would be regarded as a legitimate weapon, but if the gas effect were greater it should be banned.* That is to say, that allowance was made for the gases which are necessarily produced by high explosive shells. Gas was forbidden, but the most cruel and devastating of modern weapons, H.E. shells and bombs, received the sanction of the Conference. Prentiss very properly points out that the question of what projectiles were permissible within the meaning of the first Hague Conference was never actually put to the test, because, when gas warfare did begin on a big scale, it was not by projectile but by drift gas from cylinders.

Those who have extensive knowledge of the use of gas in warfare are greatly relieved that those in authority have recovered from their obsession regarding the importance of gas attacks from the air. They have now come into line with other countries which regard protection against H.E. bombs as of major, that against gas as of minor, importance. It is therefore much more important to study the use and effects of high explosives than those of gas poisoning, just as it is more important to provide splinter-proof shelters than gas-proof rooms.

High Explosives

In connexion with defence against aerial bombing certain important facts regarding explosives should be known to all doctors.

High explosives depend for their action upon the instability of the chemical equilibrium of their constituents. They consist of compounds of carbon, oxygen, nitrogen, and hydrogen so feebly combined that, when fired by combustion or detonation, new, simpler, and more stable compounds are formed. Once chemical action is started it proceeds with great velocity, and the explosive is immediately converted into gases with the evolution of heat. These gases, now occupying an enormously greater volume than the original substance, have powerful disintegrating properties. High explosives are very violent, detonating at the rate of several miles per second, many times greater than the most violent hurricane. In explosives used to propel bullets, shells, etc., the combustion is much slower. The violence and shattering effect of the explosive depend upon the velocity of detonation, which varies in different explosives, and also upon the amount of gas and heat generated. To effect detonation of high explosive a detonator is used, which in its action corresponds to a very violent and sharp blow accompanied by heat and flame.

Generally speaking, explosives contain an excess of oxygen, and, theoretically, should give rise to little carbon monoxide. But they vary much in this respect, and, in the conditions under which they are generally employed, produce considerable quantities of this gas. Shells give rise to less carbon monoxide than bombs or mobile charges. In all of these, if from any cause—deterioration of explosive, insufficient detonators, etc.—the wave of detonation dies out, and a slower form of combustion results, incomplete or partial detonation is said to have taken place. In this event the products of combustion are altered, much more carbon monoxide and, in addition, nitrous fumes being formed.

When a high explosive is ignited it burns at the rate of a few feet per second. During the war explosive salved from the enemy and from mines which could not be used was laid out in long lines and destroyed in this way. The products of combustion are quite different from those of explosion or detonation, very large quantities of carbon monoxide and nitrous fumes being formed. Such accidents occurred in the Navy during the war; and, in gold mining on the Rand, several accidents, where stores of explosive underground were accidentally set on fire, have been reported.

Notwithstanding the colossal scale on which explosives were used during the war, no epoch-making discoveries were made, and none have been made since. Nitroglycerine, which was discovered in 1846, still remains the most powerful high explosive. The large number of new explosives used during the war, and others which have appeared since, are merely new mixtures of substances which have been used for many years, some the natural outcome of shortage of certain materials. All the Powers at war, with the exception of Germany, used practically the same types of explosives. The Germans during the latter months of the war used liquid air very extensively as an explosive for demolition work, and for blasting operations in making dug-outs and tunnels. They were also the first to use liquid oxygen for supplying oxygen to airmen at high altitudes.

Very valuable information regarding explosives was gained from the extensive mining operations which were carried out on the Western Front. Never before had explosives been used on such a huge scale. The fact that in 1916 the enemy fired 700 mines and the British nearly 750 will convey some idea of the intensity of mine warfare. For a considerable period 30,000 men were engaged in active mining and in making underground protection for the troops.

It is the same in connexion with chemical warfare as with explosives, for to-day, twenty-four years after the start of this type of warfare, the two most effective gases belong to the phosgene and mustard gas groups. It is necessary to insist that the deadliest gases cannot be used in aerial warfare.

Most people have a very vague knowledge of explosives; this probably explains their easy belief in fantastic stories of the discovery of wonderful explosives of extraordinary power, tales of which are so often circulated by the Press. One recalls the report circulated soon after America entered the war, of a new American explosive, a tablespoonful of which would uproot St. Paul's. After the battle of Messines, when nineteen huge mines containing tons of high explosive were blown, it was amusing to read the statement of one famous correspondent that one pound of ammonal—the explosive used—could blow the

Mansion House to pieces. Tales of a similar kind have appeared at regular intervals in recent years, indeed they are a striking feature of the Secret Service and detective novels so widely read.

Liquid Oxygen and Liquid Air as High Explosives

A few months ago several newspapers harrowed the feelings of their readers by describing the devastating effects of a new bomb which had come into the possession of the Germans and which had been used in Spain. The high explosive in this bomb was liquid oxygen. It was half the weight of other bombs, and its explosive energy was said to be many times greater. What are the facts? This explosive has been in use for many years. It was first used on an extensive scale in the making of the Simplon Tunnel, where operations had been seriously affected and delayed by the dangerous contamination of the atmosphere from blasting by nitro-glycerine explosives. It was found safe to handle, powerful in action, and, except under most exceptional circumstances, did not produce poisonous fumes. Liquid air plant was installed and liquid air was used on a large scale to improve ventilation. After a short trial owing to practical difficulties its use was abandoned.

For a few years before the war the Germans had been using liquid air as an explosive in mining and quarrying. In the later years of the war Germany had available abundant supplies of liquid air from the manufacture of nitrogen, and great efforts were made to render it more practical and efficient. In 1917 and 1918 they used it for blasting in connexion with the construction of mine galleries, dug-outs, etc., and for carrying out demolitions. Towards the end of 1917 I took part in an investigation into its use as an explosive. Most valuable information was obtained from a South African mining engineer, who had a very large experience of blasting with this explosive. Engineers on the Rand have had many bitter experiences of the fouling of the atmosphere underground by high explosives. As the death rate from this among native labour was very high, strict precautions were taken, and in many mines compressed air and liquid air were in constant use to purify the air. The following were the principal reasons for abandoning its use as an explosive on the Rand. The same reasons prevented its adoption by the British during the war.

One great drawback to liquid air as an explosive, even when the cartridges were charged *in situ*, is its variability, the explosive power of the charge depending upon the proportion of oxygen in the cartridge, which necessarily varies from moment to moment. It is therefore less reliable, less efficient, and its results less easily controlled than other high explosives. Another important point is that, although weight for weight liquid air is more powerful than gelignite and other explosives—in other words its explosive energy is greater—with the type of cartridge used, bulk for bulk, it is less powerful. As a result the diameter of the drill-hole has to be twice that required for gelignite, etc. This was a serious drawback to its employment in mining. I understand that Woolwich Arsenal turned it down as useless for propellant work and for bombs.

Inflammable and Explosive Gases from Detonation of High Explosive in Bombing, etc.

The gases from the detonation of a high explosive vary in quantity and in composition according to the quality of the explosive used and also to other conditions. Those generally found are hydrogen, carbon monoxide, and methane (CH_4), all of which are combustible, and, when present in the proper proportion, explosive. Anything which prevents the carbon in the explosive being converted into CO_2 and the hydrogen H_2O will result in large quantities of H, CO, and CH_4 being formed. This will happen when there is imperfect detonation of part of the charge. Methane is never formed at the time of explosion, but results from the action of hydrogen on the oxides of carbon as the gas cools down. The greater the amount of hydrogen formed the greater will be the proportion of methane.

Explosives containing T.N.T. give rise to considerable quantities of hydrogen and methane. When any of the ammonium nitrate group of explosives are detonated in the open—for example, mobile charges, bombs, etc.—more CO, H, and CH_4 are found than when the explosive is detonated after being tamped. In some of the secondary explosions which I investigated during the war all these gases were present, but in others there was so little CO that canaries exposed to the atmosphere were unaffected.

The tendency of the gases to explode will depend on certain factors: (1) The amount of gas present—the larger the bomb the greater the volume of gas; (2) composition of gases; (3) velocity and density, pressure and concentration, of the gas. The greater these are the greater will be the liability to explode. Where gas is present in insufficient volume or in unexplosive percentage, and is ignited, the flame becomes spent.

The damage done to tunnels or dug-outs systems by the explosion of gases from detonation of high explosive is generally limited to a small area, and will depend upon the force of the explosion, much greater where the tunnels and galleries are narrow, much smaller when they are large. Even when explosives are used on a comparatively small scale in blasting enough gas may be given off to cause an explosion. The following is an example:

> In making a deep dug-out in very hard chalk, cheddite was used for blasting. Of the four shots fired two failed to detonate, one detonated imperfectly, and one completely. After twenty minutes had elapsed the men returned to the face to examine the effects and an explosion occurred. Inquiry subsequently showed that in this case the explosive used had been stored for a long time, with consequent deterioration.

During the war attention was first directed to the explosibility of gases formed from the detonation of high explosives. In 1916 a tunnelling company suffered considerable casualties, the officer commanding, another officer, and sixteen other ranks being killed. As this conveys a very good lesson of one of the great dangers of military mining, and *an entirely unknown danger of bombing*, I shall give a short description of what occurred. *Until this disaster was investigated the danger of carrying a naked light into galleries in which gas was known to be present was not appreciated.*

> The enemy exploded a camouflet—that is, a mine which did not break the surface or crater. The explosion was not intense and damage done to one gallery was small. It is probable that the mine had been charged for some time and the explosive had deteriorated. At the time four officers and a considerable number of men were in the galleries. There was an order that as soon as an explosion occurred everyone must leave the mine; an attempt was made to carry this out, but before this could be effected a secondary explosion occurred. The two officers near the site of the explosion were killed by the force of the explosion, both showing extensive burns; the sixteen men, who were at a considerable distance from the point of explosion, were killed by carbon monoxide. The mine rescue men were able to save a large number of the men. As a result of this an order was issued that no naked lights were to be used in the galleries till these were proved clear of gas. Electric lights were always to be employed when gas was known to be present.

Bombs and aerial torpedoes on detonation give rise to large quantities of gas, the CO content of which will be greatly increased if part of the charge is imperfectly detonated. Hence when they incompletely detonate in houses, the occupants of the cellars and basements are not only exposed to the dangers of gas poisoning against which the gas mask offers no protection, but they run the risk of gas explosions and fires. During the war in air raids on cities and towns and villages serious gas explosions and fires occurred and many lost their lives.

The gas thus produced may be ignited by the great heat resulting from the detonation of the bomb, or by incendiary bombs, or by the presence of a naked light. As bombs penetrate deeply before detonating gas may be given off from the ground slowly, and very gradually collect in cellars and basements, to be fired by someone approaching with a naked light; sometimes it may be hours after the bombardment has ceased. In other cases gas has found its way into cellars at a distance from the exploding bomb by passing through fissures that have been caused by the explosion. Serious gas explosions and fires were also caused by the ignition of illuminant gas that had escaped from pipes smashed by the explosion. These explosions may occur during salvage work among the debris, when pockets of gas may be fired.

It is an obvious precaution to make use of electric torches during all operations where gas is suspected, and, after an air raid, never to enter a cellar with a naked light.

THE STRETCHER PROBLEM

BY

L. CROME, B.Com., L.R.C.P. & S.Ed.

Formerly Chief Medical Officer, XVth Spanish Army Corps

No single item in the equipment of the medical services in time of war is more important than the stretcher. In the Spanish War, as a result of extensive experience, one type was universally adopted for use in the armed services and in the civilian casualty organizations. This stretcher was employed in the field for the primary transport of casualties from the line of fire to the dressing stations. The same stretcher was carried in all ambulances, and was used in the waiting rooms of field and base hospitals and in all medical units connected with A.R.P.

At present there are two main types of stretcher in existence in England. One is the standard R.A.M.C. stretcher and the other is the type recommended by the Ministry of Health for A.R.P. purposes. The fact that the Ministry of Health has recommended a stretcher entirely different from that used by the R.A.M.C. points to the conclusion that the latter was not considered satisfactory; while the fact that the R.A.M.C. has not adopted, and is unlikely to adopt, the stretcher recommended by the Ministry of Health must imply that neither of the two types is entirely adequate. Before describing the stretcher used in Spain it is necessary to point out that stretchers serve three main and two subsidiary purposes. They are used (1) to carry wounded from the field to the ambulance base; (2) in motor vehicles and trains for the transport of wounded to and from hospitals; and (3) in the waiting rooms of dressing stations and hospitals for the interim accommodation and treatment of patients before operation or hospitalization. The secondary uses of stretchers are (*a*) as sleeping accommodation for medical personnel; and (*b*) for the erection of huts, shelters, covers, and camouflage in circumstances where no other building material is at hand.

General Specification

Stretchers must have definite qualities, which will now be stated in their approximate order of importance.

1. Stretchers must be as light as is compatible with serviceability.

2. Stretchers must be comfortable. At times patients will have to lie on them for twenty-four hours or more.

3. Stretchers must be robust; they will have to stand up to the hardest wear.

4. After gas attacks stretchers may have to be decontaminated. It is essential to use material which will stand decontamination.

5. Although not much can be done in the way of postural treatment during transport, it is helpful to have a stretcher capable of holding some part of the patient's body in a position of elevation. This is especially important in cases of cranial or thoracic injury.

6. Stretchers must have sufficient clearance to prevent the patient from touching the ground. If a patient is at a sufficient distance from the ground, treatment, such as injections, bandaging, blood transfusion, is considerably easier.

7. Stretchers must be used in motor vehicles, not all of which have been constructed as ambulances. The minimum of structural alteration of the vehicle itself should be necessary before it is adapted to carry stretchers.

8. Stretchers must have suitable attachments for the application of essential splints, such as the Thomas splint.

9. While not in use for the transport of casualties the stretchers will have to be carried by stretcher-bearers from one place to another. It is necessary to make this work as easy as possible. At times only one man will be available to carry such a stretcher.

Need for Standardization

Two essential considerations in the transport of casualties are the prevention of shock and the prevention of further local injury at the site of the lesion. All extra handling of the patient, such as is necessary for the changing of stretchers, increases the danger of shock and of further injury. The ideal to aim at is, therefore, complete and uninterrupted transport of the casualty on one stretcher. At each break in the evacuation journey the loaded stretcher should be exchanged for an empty one, the latter being returned to the previous point by the returning stretcher-bearers or ambulance. Thus the patient will be spared the pain, discomfort, and danger of being moved from one stretcher to another, and much time will be saved in the process of evacuation. Ambulances will be able to return immediately after depositing their casualties and receiving in exchange an equal number of empty stretchers with the corresponding number of blankets. Such a system of relay evacuation is only possible if the same type of stretcher is used throughout the evacuation line. The needs of the armed services and of the civilian population are identical in respect of stretchers, and there is no reason why the same type of stretcher should not be used throughout the country.

If a "universal" type of stretcher is necessary from the functional point of view its standardization is essential from the point of view of production, maintenance, and replacement. The stretcher requirements of the armed forces may be calculated from the presumed ratio of one stretcher to thirty men. For the civilian population the ratio is more variable, but an anticipated figure of 500,000 stretchers at the beginning of the war, going up to 750,000 during the first year, is not an exaggeration. The problem of production on this scale and continuous replacement can only be satisfactorily solved by complete standardization and the timely preparation of raw materials necessary in the construction of these stretchers. It is also desirable that if one of the component parts of a stretcher is irreparably damaged or lost it should be capable of being replaced by another identical part without the necessity for discarding the entire stretcher.

Storage space must also be considered. Stretchers must be produced in peace time and stored, and they must be delivered in such a way that the minimum space is required for their transport and storage. Finally, cost can only be brought down to a minimum if the stretchers are standardized on a mass production basis.

The Spanish Stretcher

The Spanish stretcher consists of five parts which can be readily assembled: (1) two horizontal wooden poles; (2) iron head-piece; (3) iron foot-piece; (4) a double layer of canvas fastened with leather straps in front of the head-piece; and (5) two shoulder-slings made of stout leather with loops for the handles of the stretcher. When assembled, the stretcher is carried by two bearers, each wearing a shoulder-sling in such a way that the weight of the stretcher is secured by these slings even if the hand grip should fail (Fig. 1). Dismantled head- and foot-pieces can be rolled into the canvas and carried on the shoulders of one of the stretcher-bearers, being secured by the shoulder-slings. If necessary, the same stretcher-bearer can also carry the poles (Fig. 2), but it is usual for the poles to be left to the second stretcher-bearer.

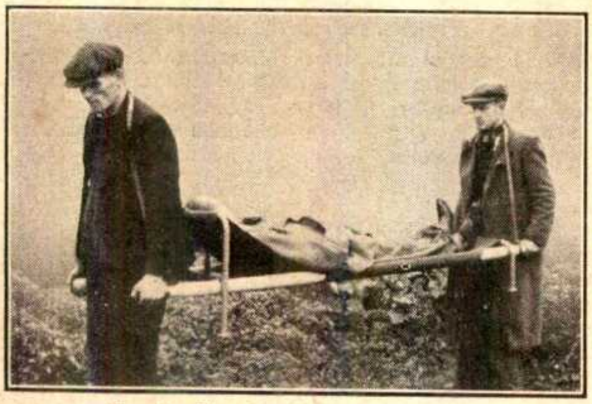

Fig 1.—The Spanish stretcher in use.

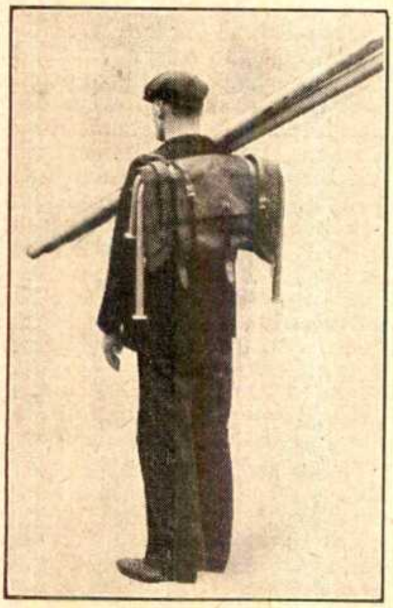

Fig. 2.—The Spanish stretcher dismantled.

The fittings necessary for the reception of the stretcher in a motor vehicle can also be used for stretchers which are not of the type described (Fig. 3). These fittings are inexpensive and easy to manufacture, and can be fitted in any closed van without structural alteration. Each fitting has two swivels which enable it to be swung flat against the side of the ambulance, leaving space free for sitting patients if this is required. Though it serves as a spring, the fitting is extremely strong. During the whole of the Spanish War it was unknown for any of them to give way. Moreover, it has a very small surface and is therefore seldom damaged by fragments of bombs or shells.

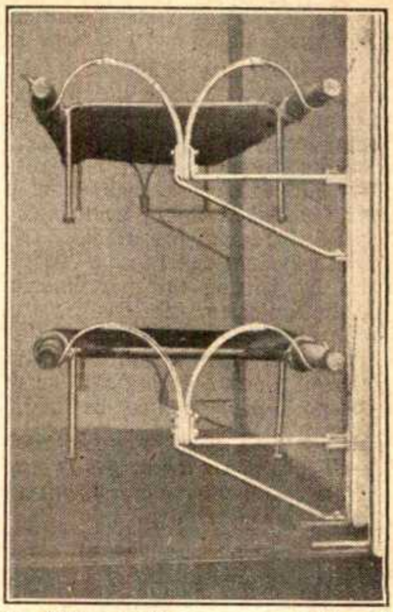

Fig. 3.—The fittings used to convert an ordinary light van for use as an ambulance.

Conclusion

It is suggested that the type of stretcher described can be put to all uses in war time. It meets all the requirements for such stretchers and is easily standardized.

By reversing the position of the patient on the stretcher the upper horizontal bar of the head-piece may be used for attachment of a Thomas's splint. The empty triangular space formed by the upper and lower layers of the canvas at the attachment to the head-piece may be used for carrying the patients' loose belongings.

All the component parts of the stretcher, including the canvas, are detachable and can easily be cleaned, washed, disinfected, and decontaminated.

The incline formed by the upper layer of the canvas allows for postural treatment. The complete stretcher weighs 25 lb.

While I have not attempted to balance the advantages and disadvantages of the suggested stretcher against those used by the R.A.M.C. or recommended by the Ministry of Health, its relative merits will be readily appreciated by all who are familiar with the problem.

I wish to express my gratitude to Messrs. N. A. Bronsten and Co. Ltd. for their good offices in preparing the demonstration model of the stretcher described above and allowing me to reproduce the photographs.

Photodynamic Activity in Carcinogenic Hydrocarbons.—Exposure to extreme dilutions of either of four carcinogenic hydrocarbons sensitizes cultures of Paramoecium to ultraviolet light. Other substances having this photodynamic action (eosin, acriflavine, etc.) are less potent and unaffected by light conditions during contact, whereas carcinogenic hydrocarbons sensitize much more effectively in the dark. These observations, apart from their wider theoretical interest, disclose a method for the biological assay of small quantities of carcinogenic hydrocarbons.—Comparison of Photodynamic Activity of Some Carcinogenic with Non-Carcinogenic Compounds. I. Doniach.—*Brit. J. exp. Path.* June 1939, **20**, 227.

INCOME TAX

Diminution in Earned Income

In his Budget speech the Chancellor of the Exchequer made it clear that he recognized that while all income-taxpayers would have to make sacrifices to meet the increased demands under the new Finance Act, the higher rates of duty would bear with particular severity on those whose incomes were falling, and especially where the income was "earned." That is, of course, the inevitable consequence of the system of assessing income for one year on the basis of the profits of the previous year. To pay at an increased rate of tax on, say, £1,000 is bad enough if the income is stable, but it is harder still to find the tax if in the meantime the income has fallen to, say, £750. Accordingly, Section XI of the Finance (No. 2) Act, 1939, provides some measure of relief to taxpayers whose incomes come within a carefully defined class. The national circumstances of the present year will affect individual incomes to a very great extent, and medical practitioners will be by no means exempt from the general fluctuations. For that reason it may be convenient to put on record at the earliest opportunity the main features of this form of relief. In the first place the relief applies to "individuals," and not, for instance, to a partnership as such; in the second place the fall in income must be "owing to circumstances directly or indirectly connected with the war"; and, thirdly, the relief applies only to "earned income." In order to invoke the benefit of the section a claim for 1939–40 must be made by April 5, 1941, and the claimant must be able to show that his actual earned income for 1939–40 is not more than four-fifths of the amount at which it is assessed. If, therefore, the earned income has fallen from £1,000 in 1938–9 to £750 in 1939–40, the assessment on £1,000 for 1939–40 (on the basis of the previous year's earnings) can be reduced to the actual earnings of that year—that is, to £750.

There is one corollary to the relief which should not be overlooked. If the taxpayer elects to have the 1939–40 assessment adjusted in that manner then the Revenue authorities can require an adjustment of 1938–9 to the actual earnings of that year—the reason being that otherwise a "bumper" profit of 1938–9 might escape the Revenue net. There will, of course, be a number of cases where the fall is heavy but less than one-fifth; and it would obviously be unfair if a reduction of 20 per cent. gave full relief and a reduction of, say, 19 per cent. obtained no relief at all. To meet that point some elasticity has been given to the limit by providing that, in effect, a taxpayer can, so to speak, forfeit to the Revenue the excess over four-fifths and then obtain the relief he would receive if his earned income had in fact been reduced to four-fifths of his assessed income.

One further point should be mentioned. While the section is not explicit on the point it appears to be drawn in such a way as to require aggregation of the earned income for the calculation of the ratio of diminution. For instance, suppose a single-handed practitioner whose earnings in 1938–9 (and therefore his assessment for 1939–40) were £1,000 joins the Forces, with the result that for 1939–40 his practice earnings fall, partly perhaps owing to the employment of a locumtenent, to, say, £700, but on the other hand he receives assessable military pay to the extent of £300, then his assessed earned income is (£1,000 + £300 =) £1,300, and his actual income is (£700 + £300 =) £1,000, and as £1,000 is less than four-fifths of £1,300 he is entitled to have the assessment on his practice reduced from £1,000 to £700. Further, if the practice earnings were £750 instead of £700, so that the actual earned income became £1,050 as compared with four-fifths of the assessed earned income—that is, with four-fifths of £1,300 = £1,040—then he could have the "actual" basis applied, but would have the relief restricted by the £10 he would be required to forego to bring himself within the limit of four-fifths.

It will be realized that the provision is one of considerable complexity, but it will be of real benefit in many cases, and is therefore one which should be borne in mind whenever the application of the previous year's basis to the assessment of earnings inflicts substantial hardship.

A STUDENTS' REGISTER

An accurate but incomplete register of medical and dental students who have been admitted to the schools during the last academical year has lately been issued by the authority of the General Medical Council under the new provisions for students' registration, which came into force in September, 1938. The volume consists of an alphabetical list of the students admitted during the year, with the date of birth, the date and kind of preliminary and additional examinations, the school at which medical studies have commenced, and the date of registration. The number of medical students whose names have been returned to the Council by the authorities of the schools is 1,735, but another 400 or 500 must be added because, for some unexplained reason, returns are not forthcoming for several schools, including Liverpool, Aberdeen, St. Andrews, Queen's University, Belfast, and University College, Dublin.

The various preliminary examinations in general education by virtue of which the students have been admitted to the schools of medicine and of dentistry number nearly seventy. Most of them are held by universities, a few by public authorities, such as the Scottish Education Department and the Central Welsh Board, or by chartered bodies such as the College of Preceptors. The examination which has brought the largest number of medical students on to the register is the London Matriculation (188), followed closely by that of the Scottish Universities Entrance Board (178), the School (or Leaving) Certificate Examination of the Oxford and Cambridge Schools' Examination Board (173), the Cambridge "Previous" Examination (153), and the London General Schools (140). Of the twenty-four additional examinations taken the highest number of medical students (507) came through the University of London; the next highest through the University of Edinburgh (202). Examinations held abroad gave thirty-eight medical students and the same number of dental students to the register, but whereas most of these medical students entered by way of universities in the British Empire, most of the dental students were Continental exiles who had taken their degree in medicine many years ago, chiefly in Vienna.

Of the medical schools to which the students have been admitted, those of the University of London have taken 506, King's College and University College each taking over 100; the University of Cambridge has taken 159, that of Oxford 89, that of Durham 76, while Leeds and the Victoria University, Manchester, have each taken 67. The students who have started at Edinburgh number 202; Glasgow can show only half that total. The number of women who have entered the study of medicine during the past year is 284, or just over 16 per cent. of the total entry. Medicine attracts a larger proportion of women than does dentistry, for of the 316 dental students only 32 are women, or 10 per cent. The oldest student to enter medicine is a woman; she was born in 1893, passed the London Matriculation examination in 1922, and is now beginning medical study at the London School of Medicine for Women. She has half a dozen men colleagues, however, who are taking up medicine when over the age of forty. The year of birth of the great majority of students, medical and dental, is 1919 or 1920. A few—140 medical students—were born in 1921.

No one could have foreseen at the time this register was compiled that the students whose names it contains would now be so widely dispersed, receiving their training in places and under conditions so unexpected, yet their unusual experience may be of value. Glancing over these arid lists of names one cannot help wondering whether here and there one of them may be on the tongues of all men forty or fifty years hence.

Nova et Vetera

AN EARLY EXPERIMENTAL LOBECTOMY

Mr. R. T. Gunther, keeper of the Old Ashmolean Museum at Oxford, has recently published the twelfth volume of *Early Science in Oxford*. It deals with Dr. Robert Plot and the correspondence of the Philosophical Society of Oxford with the Royal Society in London and the Philosophical Society in Dublin. The letters which passed between the Oxford and the Dublin Societies are of especial interest. Here is one from Dublin dated November 10, 1684.

"Dr. Mullen gave an account of the following experiment: A vintner in this town being troubled with a consumption, complained much of a trouble in the left side of his thorax, and would often with some confidence and persuasion assert that he was sure he should do well enough could the thorax be opened and a certain piece of his lungs be cut out with impunity. But this desperate remedy was not hearkened to by anyone: so the sick man died. Notwithstanding, Dr. Mullen resolved to try the experiment on a dog, and opening its thorax he cut off from one lobe of the lungs a piece three inches long and two broad, and making a ligature to hinder the effusion of blood he closed the wound. The dog recovered perfectly well and showed no manner of want of what he had lost. About six months afterwards the doctor hanged the dog, and opening it found the end of the lobe, where the wound was made, firmly united to the intercostal muscles where the thorax was opened, and the thread that made the ligature had vanished and was supposed to have been discharged through the wound in the chest."

Dr. Allen Mullen, who records the experiment, was a brilliant young anatomist of North Irish extraction who is said to have come to a bad end. He graduated from the Dublin University, taking his Arts degree in 1676 and his M.D. in 1684. He was elected F.R.S. on July 18, 1683, and became a member of the newly formed Dublin Philosophical Society in the following year. He left Dublin for London on account of some trouble with a lady, went to Barbados, drank too much, and died there in 1690.

D'A. P.

AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE

The American Association of the History of Medicine, which, alas! possesses no congener on this side of the Atlantic, held its fifteenth annual meeting at Atlantic City, New Jersey. With a view to increasing its usefulness and to stimulating research, study, and interest in medical history in North America, the Association last year adopted a new constitution and by-laws and chose as its official organ the *Bulletin of the Institute of the History of Medicine of the Johns Hopkins University*, now known as the *Bulletin of the History of Medicine*. The meeting was well arranged, due space being given to both new historical material and to a critical evaluation of existing knowledge, and the papers, which were published in the July number of the *Bulletin*, were appetizingly short. Among the material presented was "The Old Age of King Lear" by Professor John W. Draper, "Nursing Cans" by Dr. Howard Dittrick, "Clinical Teaching in America with Some Remarks on Early Medical Schools" by Professor David Riesman, "Idealogical Basis of Discoveries" by Dr. Iago Galdston of the New York Academy of Medicine, and "Provision for the Sick Poor in Colonial Times" by Mr. Albert Deutsch. In an account, full of colour and scholarship, of "Occupational Diseases of English Seamen during the Seventeenth and Eighteenth Centuries," Dr. George Rosen of Brooklyn dealt with such maladies as scurvy, typhus, typhoid, dysentery, relapsing fever, and yellow fever. One of the most challenging papers, the presentation of which was a continuous delight, was "The Place of the Amateur in the Writing of Medical History" by Mr. W. B. McDaniel, Librarian of the College of Physicians of Philadelphia. At the Council meeting the delegates of the constituent societies read their reports, Dr. Victor Robinson representing the recently launched New York Society for Medical History, and at the business meeting Dr. Esmond R. Long was elected President, Dr. Edward B. Krumbhaar, who had founded and steered the Association through its infant years, Honorary President, and Drs. Harvey Cushing, Arnold C. Klebs, Rudolph Matas, and Charles W. Burr Honorary Members. After the dinner the retiring President, Dr. Walter R. Steiner, gave an address entitled "Some of Louis's Distinguished American Pupils," and Dr. William G. Leaman of Philadelphia, through a fascinating film, showed how medical history may be introduced into clinical teaching. The Association's secretary, Professor Henry E. Sigerist, is to be congratulated on the success of this meeting, which was very largely due to his foresight, imagination, and tireless energy.

HISTORY OF MEDICAL SOCIETIES

The work on *British Medical Societies*, edited by Sir D'Arcy Power, who has written the preface and the account of the Abernethian Society, consists of thirty-four articles by various writers which originally appeared in the *Medical Press and Circular* and have been now republished with or without additions.[1] Of the thirty-four societies, one (Society of Apothecaries) was founded in the seventeenth century, seven in the eighteenth, seventeen in the nineteenth, and nine in the twentieth. But for the amalgamation in 1907 of seventeen societies in the Royal Society of Medicine, whose history is related by a former president, Dr. T. Watts Eden, the list might have been considerably longer. The topographical distribution of the societies is as follows: London, 21; provinces, 6; Wales, 1; Scotland, 4; and Ireland, 2.

Among the earliest medical societies were those founded by medical schools, such as the Royal Medical Society of Edinburgh (1737), Guy's Hospital Physical Society (1771), and the Abernethian Society of St. Bartholomew's Hospital (1795). The Listerian Society of King's College Hospital received its present name in 1912, having previously been known as the Hospital Medical Society since its foundation in 1833.

The majority of the societies deal with medicine in the widest sense of the term, and the only specialist societies described are the Ophthalmological Society of the United Kingdom, founded in 1880, the Anatomical Society of Great Britain and Ireland (1887), the Medico-Legal Society (1901), the Medical Section of the British Psychological Society (1901), the Pathological Society of Great Britain and Ireland (1906), the Royal Society of Tropical Medicine and Hygiene (1907), the Research Defence Society (1908), and the Association of Surgeons of Great Britain and Ireland (1920).

Many papers which have since become classical were first read before these societies, such as John Hunter's paper on ligature of the femoral artery and Jenner's on vaccination before the Guy's Physical Society in 1802; Paget's paper on *Trichina spiralis* before the Abernethian Society when he was a student in 1835; and Sir William MacEwen's paper on cerebral abscess before the Royal Medico-Chirurgical Society of Glasgow in 1887. Mention must, of course, be made of the publications of the largest medical society in the British Empire, whose history is written by Sir Henry Brackenbury—namely, the British Medical Association—which has issued the results of various collective investigations of urgent medical interest.

The book contains numerous illustrations, including portraits, meeting-places of the societies, and presidential badges.

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[1] *British Medical Societies*. Edited by Sir D'Arcy Power, K.B.E., F.R.C.S. (Pp. 312; 48 plates. 10s. 6d.) London: Baillière, Tindall and Cox. 1939.

Local News

ENGLAND AND WALES

London County Medical Officer of Health: Retirement and New Appointment

At its meeting on October 17 the retirement of Sir Frederick Menzies, medical officer of health, was reported to the London County Council, and the Council adopted a resolution placing on record its high appreciation of the services Sir Frederick Menzies has rendered. The Emergency Committee stated that his retirement would deprive the Council of the services of an officer in whom it had justifiably placed the highest confidence. "The strength and graciousness of his character and personality have won the respect and esteem of members of the Council and of the members of his staff, both at the central office and at the hospitals." On the question of superannuation, it was stated that Sir Frederick Menzies became a full-time officer of the Council at the age of 35 years. A regulation of the Council provides that in considering the grant of special retiring allowances to officers who enter the service of the Council at the age of 30 or upwards due weight shall be given to the fact of such entry, coupled with the possession of special qualifications not usually to be obtained within the service. The Council decided to add five years to his pensionable service, the effect being that while the lump sum (£3,000) payable to him from the superannuation and provident fund remains the same, his pension of £1,056 a year from that fund will be supplemented by a separate amount, payable out of the county fund, to bring the total to £1,306 a year.

The present deputy medical officer of health, Dr. W. Allen Daley, was appointed to succeed Sir Frederick Menzies as from November 2, the date of his retirement, his salary to be £2,750, rising after one year to £3,000 a year. Dr. Daley, who is 52 years of age, had a wide experience in the provinces, culminating in his appointment as medical officer of health and school medical officer of the city of Hull. In 1929 he became a principal medical officer in the public health department of the L.C.C., and was placed in charge of the general public health division. Subsequently the scope of his responsibilities was widened to include the oversight of staffing and other matters connected with the hospitals service. He acted as medical officer of health for a period of six months in 1932 during the absence on sick leave of Sir Frederick Menzies. He was appointed deputy medical officer of health and deputy school medical officer in November, 1938, and has had wide responsibilities as second officer of the department. Dr. Daley is also a representative of the Minister of Health on the Central Midwives Board, vice-chairman of the Central Council for Health Education, and examiner in public health to the University of London.

Cancer Research in Yorkshire

The reports and accounts of the Yorkshire Council of the British Empire Cancer Campaign, 1938–9, include the report of the department of experimental pathology and cancer research, University of Leeds, and of research work on cancer at the Field Laboratory, University of Sheffield. An investigation is in progress on the mechanism of carcinogenesis by the dye *p*-dimethylaminoazobenzene, alternatively known as dimethyl-yellow or as butter yellow, a substance which, as was shown a few years ago by Kinosita and other Japanese workers, induces malignant disease of the liver, hepatomata, and chalangiomata when given orally or by injection to rats and mice. In the present study rats are killed at intervals during a course of feeding, and it appears that the formation of liver cancer is preceded by cirrhosis. This experimental cirrhosis bears a number of points of resemblance to the ordinary multilobular cirrhosis of human beings, considered by many observers to be a precancerous condition, but it also shows a notable difference—the absence of ascites. It is suggested, however, that since the tumours appear to arise at a comparatively early stage in the experimental process the absence of ascites may be attributable to the death of the animal before there is time for the condition to appear. A point of interest is that tumours can arise at a period when the cirrhosis is not as yet irreversible, for in animals killed some time after the administration of the dye has been discontinued the tumour-free portions of the liver may have returned to a more or less normal condition. Further experiments deal with the action of large single doses of dimethyl-yellow upon the livers of animals; also with the rate of absorption, which has been found to be very rapid. The rate of excretion of the dye is still under investigation.

AUSTRALIA

Queensland University Medical School

On August 11 the Hon. W. Forgan Smith, LL.D., Premier of Queensland, officially opened the Medical School of the University of Queensland at Brisbane. This is the final achievement in the campaign for the provision of facilities for medical education in the State. When in October, 1936, the Faculty of Medicine within the University of Queensland was inaugurated that function marked the successful issue of representations which began as long ago as the foundation of the University itself. The first proposals in 1913 were interrupted by the outbreak of war. In 1922 arrangements were made for anatomical demonstrations to be given to some of the dental students, who received two years' training at the dental school in George Street. In 1925, largely as the result of the work of a subcommittee of the Queensland Branch of the British Medical Association, a conference of delegates was called by the Home Secretary to discuss the subject. Two years later, with the co-operation of the Brisbane and South Coast Hospitals Board, a small school of anatomy for the teaching of dental students was established. In 1934 the activities of the anatomy school were transferred to a building given to the University for the purpose by the Freemasons of Queensland. In the following year a Faculty of Dentistry was established within the university and the Premier of Queensland appointed a select committee to report upon the practicability or otherwise of establishing a Faculty of Medicine and a Faculty of Veterinary Science within the University. The committee strongly advocated the institution of these faculties, and stated that the Faculty of Medicine should include particularly tropical medicine and public health as parts of routine medical education, and should be based upon recognition of the essential nature of the practical and clinical side of medicine. Meanwhile the College of Pharmacy was made available to the University for the purpose of physiology. With the establishment of schools of anatomy and physiology it became possible to provide medical courses for students of the second and of the third year. The next step was to provide further accommodation to include the departments of pathology, social and tropical medicine, and other clinical departments. The Government undertook the cost and decided to provide worthy buildings.

The new Medical School of the Queensland University occupies a commanding position at Herston on a site of over six acres adjoining the western boundary of the Children's Hospital and within a few minutes' walk of the Brisbane General Hospital. The building, in the Renaissance style, is three stories in height, and surmounted by a copper dome rising from a flat roof. If future extensions are required these can be added in the form of projecting wings at either end of the central block, which measures 222 feet in length. It is intended that fourth, fifth, and sixth year students shall receive in the Medical School the whole of their training in all branches of medical and surgical science and that the third year students shall receive their training in anatomy there, while first and second and the remainder of the third year work will be carried out at the present University, and later on at the new building in course of erection at St. Lucia.

Reports of Societies

THE PROFESSION OF SURGERY

Mr. Zachary Cope's Address

The annual address from the chair of the Medical Society of London was delivered on October 9 by Mr. V. ZACHARY COPE, the incoming president, whose subject was "The Profession of Surgery."

Mr. Cope began with the remark that during his own lifetime of fifty-eight years surgery had developed from an unscientific to a scientific profession which had strongly established itself among all civilized peoples and brought benefit to nearly all persons at some time in their lives. The advance of the surgical craft had been so rapid and its conquests so firmly consolidated that it was scarcely realized that the profession was a new one—new in outlook and achievement and new in its economic and social importance. The modern profession of surgery bore little or no resemblance to the surgery of sixty years ago. The young surgeon of to-day performed as a routine operations, undreamed of at that not very distant time, and from the economic point of view surgery had brought to the community health, happiness, and working power of a value beyond estimation.

In the modern sense surgery was impossible until the prevention of infection of wounds was demonstrated. Lister's first important publication on the use of antiseptics was made in 1867, while Lawson Tait's empirical but successful aseptic methods began just a little later. It was well known that the London surgeons were among the last to accept Lister's teaching, but it deserved to be recalled that it was at a meeting of the Medical Society of London that Lister obtained one of his first acknowledgments in the metropolis. That meeting was held on October 29, 1883, when he addressed the society on the operation for fracture of the patella. At the end of his address he was given a good reception, and in reply he was reported to have said: "Gentlemen, thank you most heartily for that cheer, for there was a time when such remarks proceeding from my friends met with a different reception." Sir George Turner in his reminiscences stated that Lister said of that cheer that it was the first he had had since he came to London five years before.

Great Periods of Surgery

The period between 1867 and 1881 was described by Mr. Cope as the gestation period of modern surgery; from 1881 to 1900 as the time of youth; from 1900 to 1918 as adolescence; and from 1918 until the present day as maturity. During the earliest of these periods the teaching of Lister was rapidly spreading through Germany, America, and finally England. Even before 1867 ovarian cysts had been successfully removed on several occasions, and colostomies had been performed by some surgeons, but before 1881 no appendix had been removed, no perforated ulcer had been successfully sutured, the surgery of the thyroid was unknown, the surgery of the spinal cord and brain, apart from depressed fracture, had not begun, and renal surgery had hardly been touched.

The period from 1881 to the end of the century saw great advances in all directions. The surgeons explored every type of disease which they thought might be relieved by the new surgery. The necessary process of trial and error was not always followed by successful results, but by 1900 the lines of modern surgery had been laid down, though not standardized. From then until the beginning of the great war the new surgery showed some of the symptoms of adolescence—for example, in the extremes of some operations then performed—but during this period there was an increasing standardization of well-recognized operations, and new fields were being opened up, though there was evident neglect of certain important sections of surgery which were apparently overshadowed by the development of surgery of the abdomen. This was particularly the case with the treatment of simple fractures, wounds, and orthopaedics generally. During the last war grim necessity forced surgeons to focus their attention on the treatment of wounds, fractures, and deformities, and one outcome was the rapid development of plastic and orthopaedic surgery.

To-day there was no part of the body which was immune from the attack of the surgeon, and no organ or viscus which had not at some time or other benefited from surgical intervention. The scope of surgery had widened to such an extent that it was an important factor in maintaining the health of the nation. In the year 1932—the last year for which he could get good statistics—over 150,000 operations were performed in the hospitals of London alone. At a conservative estimate this meant that half a million operations were performed annually in the country as a whole, and that more than one per cent. of the population underwent an operation in a year.

Supply of Surgeons

The necessary corollary followed that it was in the highest interests of the nation that there should be an adequate supply of thoroughly trained and experienced surgeons. Could it be said that such a supply was available? An affirmative answer could not be given with certainty. There was no doubt that surgeons at hospitals were worked harder than in past times if the number of operations were taken as a criterion At St. Mary's, his own hospital, sixty years ago there were ten operating surgeons, to-day there were fifteen, yet during those sixty years the number of operations had multiplied many times. In 1877 the number was 154, and in 1882, 613; by 1906 it had reached 1,632, and in 1938 this figure was more than doubled. These statistics showed the increased work which had been thrown upon the individual surgeon, but they did not necessarily prove a dearth of surgeons. Those in large cities might sometimes think that the profession was overcrowded, but it must be remembered that it was to large cities that talented and ambitious men naturally gravitated. A better opinion could perhaps be gathered by considering the number of surgeons who obtained the higher surgical qualifications. In England and Wales in 1880 there were 1,215 holders of the F.R.C.S.; in 1938 the Calendar of the Royal College gave 2,480, almost exactly double, this in a period during which surgical activity, as judged by operations only, had increased tenfold. Admittedly there were other high surgical qualifications besides this diploma, but there was no reason to suppose that the number of their possessors had increased to a greater extent than the roll of the Royal College. It must be concluded either that the country was over-supplied with surgeons in 1880 or that it was under-supplied at the present time. That the latter was more likely was suggested by the fact that many surgeons were attached to two, three, or four hospitals of considerable size.

Training of the Surgeon

Although modern surgery required a high degree of special training there was in this country no compulsion on the surgeon to undergo any special postgraduate course and no necessity for him to obtain any special diploma in surgery before starting to practise this difficult art. The only guarantees that intervened between the incompetent surgeon and the public were: (1) the discriminating judgment of hospital committees; (2) the discriminating judgment of his professional colleagues; and (3) the sense of responsibility of the surgeon himself. It was a testimony to the good sense of the profession that these guarantees seldom failed.

Mr. Cope proceeded to discuss the kind of training which the surgeon ordinarily received. Usually he began by holding the office of surgical registrar, though sometimes a man might gain a staff appointment after doing some special research work and without serving as registrar. Some entered the municipal service, where they got excellent experience with a varying amount of supervision. Nearly all the routes ensured that the surgeon gained experience under the supervision of senior men. Fortunately the instances were rare in which men who had not even held a house appointment went straight into practice and attempted major surgery. It must be admitted that the surgeon could not be standardized any more than the general practitioner, but it should be possible to ensure a greater minimum of knowledge and experience in everyone wishing to become a surgeon.

The responsibility of the profession to the public was such that adequate guarantees as to the sufficient training of anyone wishing to practise major surgery should be furnished. The American College of Surgeons had a scheme whereby everyone who wished to become a Fellow of the College was required to undergo a strict and extended apprenticeship after qualification. It was probably true that in none of the higher British surgical qualifications was supervised practical experience sufficiently insisted on as an essential preliminary for the candidate. Some qualifications indeed were open to the criticism that they seemed more in the nature of competitive examinations than tests designed to demonstrate a candidate's skill and experience of surgery.

In spite of the criticisms that might be made as to surgical training, the general level of surgery in this country was very high, and the position of the surgeon in the community was probably more respected than it had ever been owing to the great and often speedy benefits he brought to many patients. The surgeon had gained the confidence of his fellow citizens to such an extent that he was often expected to do the impossible. The public appeared to think that if only the surgeon would do something, good was sure to result. Some of the most difficult moments for the surgeon were those in which he felt it necssary to advise against operation when the relatives clamoured for something to be done.

Rewards of the Surgeon

The life of the surgeon was of absorbing interest, whether from a humanitarian or a scientific point of view, or from the point of view of that less praiseworthy but common desire to obtain benevolent power to control the destinies of other mortals. To no man was the destiny of human life so often delivered. As a judge he had not only to give the verdict but himself to carry out the sentence. His power of speedy diagnosis and decisive action in a crisis was of the greatest value. A famous physician-dramatist had said: "He is surrounded by respectful and even adoring acolytes, and he holds the power of life and death over helpless persons. If he is to avoid madness he must stand aside from the business from time to time and deride himself and his colleagues." Mr. Cope thought that it would be sufficient if each surgeon limited his derision to his own failings.

In some respects the surgeon of to-day was more isolated than his forerunner of fifty years ago. At the beginning of the modern era it was customary to have regular consultations between the members of the staff of the large hospitals. This practice had fallen into disuse. Each member of the staff worked on his own and might seldom see his colleagues. There were welcome signs, however, that a system of co-operation might soon be general. The advantages of the group system were becoming recognized. Here the diagnosis made by the surgeon was discussed, challenged, or confirmed from their respective points of view by the physician, the pathologist, and the radiologist, and all to the patient's benefit.

The competent surgeon, said Mr. Cope in conclusion, was assured of an honoured place in the community. To gain the high regard of his fellow surgeons counted for more than any social distinction. If opportunity offered he might have the extra happiness of pursuing some useful work of research. His material reward was greatly varied. Ambroise Paré wrote of a patient who "was cured by the grace of God and made me a handsome present of such sort that I was well contented with him and he with me." But the young surgeon often had a long period of lean years, earning a bare subsistence. Even when elected to the staff of a hospital he might find it hard to make ends meet. But this unsatisfactory state of affairs was likely to find its own remedy. Owing to the decentralization of surgery it was unlikely, and perhaps undesirable, that the rewards would ever be as great as they were in the opening days of the new era. The man who entered the surgical profession chiefly to make a fortune had already made a mistake. The best reward must be always the satisfaction of knowing that interesting, useful, and skilful work had been faithfully performed.

Footnote on Lister

In seconding a vote of thanks proposed by Sir WILLIAM WILLCOX, Sir STCLAIR THOMSON added a footnote to what Mr. Zachary Cope had said about Lister's appearance before the Medical Society of London. He said that he himself had been present in that very room in 1883 when Lister showed the first nine cases of fractured patella in which the joint had been opened and the patella wired. He himself was house-surgeon to Lister at that time and collected and wrote up those nine cases for his chief. It was true that the first cheer which Lister got after five years in London was on that occasion, but it ought to be added on the other hand that one of the most distinguished surgeons of the day who was presiding made the remark: "*C'est magnifique, mais ce n'est pas la chirurgie.*" Lister was very depressed after that reception, in spite of the applause, because at the meeting different surgeons had felt the knees of the patients and had asked: "Is the wire really in there? And is this man a bus conductor, running up and down on his bus? Well, if one of these men had a pyaemia and died, Mr. Lister ought to be tried for manslaughter." Sir Eric Erichsen said that the knee-joint, like the chest and the abdomen, should always be protected from the invasion of the injudicious surgeon. Sir StClair mentioned this to show the changes which had taken place since that time.

Correspondence

Hospital Posts: Responsibility under Supervision

SIR,—During the next five years from 2,000 to 2,500 students will qualify in medicine every year. Owing to the dispersal of teachers, the utilization of makeshift quarters, and the acceleration of clinical studies, their training may be less adequate than in peace time. It will be lamentable if the strain of war-time practice is imposed on these young people without further preparation. Yet most of our hospital appointments have been indefinitely prolonged by the outbreak of war and the normal turn-over of house officers has ceased. This is doubly unfortunate, as there never was a time when the hospitals of this country were more closely integrated or when the advice of consultants and specialists was more uniformly available. Surely this is the ideal opportunity for beginning the system of a compulsory hospital appointment of at least six months' duration immediately after graduation. The rotating service, so usual in Canada and the United States, whereby a man moves through the various departments during one or two years of hospital appointments, would not be practicable, but the exact nature of the appointment does not matter greatly. What is important is that a man should be in responsible charge of patients and yet supported by expert assistance; that he should be living in residence with men and women similarly employed, helping them with a transfusion or a casualty, taking an occasional week-end duty in another department, and talking shop at every meal in the residents' dining room. The growth in mental stature and personality during this period is very great, and it is silly to send men and women to the individual responsibilities of war without it, when the probationary period can so usefully be employed in hospital.

There are in Great Britain some 80,000 beds in voluntary hospitals alone and a total of over 200,000 beds in voluntary and public general hospitals. It would not be difficult to allot each hospital region its quota of graduates every quarter, and a good deal of option and free choice could be exercised within such a system. Complete maintenance plus a salary of £100 per annum would be a fair remuneration for these junior house officers, and the hospitals could then be officered on a more generous scale than has existed in the past or than is compatible with the rates of pay in the present Emergency Medical Service.—I am, etc.,

Radcliffe Infirmary, Oxford, Oct. 10. L. J. WITTS.

Blood Groups in Great Britain

Sir,—In your issue of September 30 (p. 712) Dr. Edward Billing stresses the importance of the genetical and ethnological data on the O, A, B system of blood groups, which should be obtainable from the extensive activities of the blood transfusion service.

With the co-operation of the sectors and depots of the London area we were able, at the Galton Laboratory, to accumulate data on over 58,000 persons, which we put on record at the International Genetical Congress at Edinburgh last August, and which will be published in more detail in the *Annals of Eugenics*. Much of this material has since been subdivided for sex, but in cases in which forms have been already distributed to a large number of hospitals it has not always been possible to effect this subdivision. The Scottish empanelling centres are, however, now sending in material completely classified for blood group and sex. This we regard as of the highest importance. We should, therefore, like to appeal to all empanelling centres now active to co-operate by sending in from time to time numbers classified in eight classes. By so doing they will not only swell the totals and so throw light on points which require very large numbers for their elucidation, but will open up the field, at present wholly unexplored, of the homogeneity or heterogeneity in respect to blood groups of the population of these islands.—We are, etc.,

R. A. Fisher,
G. L. Taylor.

Galton Laboratory Serum Unit at the
Department of Pathology, University
of Cambridge.

Blood Transfusion Technique

Sir,—The booklet describing blood transfusion methods recently circulated by the Medical Research Council contains a section on the adaptation of certain apparatus to the vacuum method of blood collection described by us in the *Lancet* (1939, 1, 388). The advice given in this section is unsatisfactory, and, if followed, will lead to so many failures that its circulation is regrettable. The chief defects are as follows:

Type of tubing to be used for blood collection.—It is necessary for smooth working that pressure tubing should be used. If the tubing distributed by the M.R.C. (No. 8, 3/16th inch internal bore) be used as they suggest it will collapse under the influence of the vacuum and the flow of blood will be impeded. A six-inch length of tubing is also too short for convenience, and about nine inches should be used.

Type of collecting needle.—The 15/10 needle has great advantages over the 24/10 size recommended by the M.R.C. In the first place it simplifies venepuncture, which is an important consideration when blood has to be collected by workers with little experience from donors who are not specially selected for the large size of their veins. The smaller needle will fill the bottle just as efficiently as the larger one, which is in fact more likely to be obstructed by collapse of the vein on to its orifice. The 15/10 needle has the further advantages of lower cost and uniformity with the needles recommended by the M.R.C. for blood administration.

Preliminary filling of the tube with citrate.—We have now performed several hundred collections using dry-sterilized apparatus as originally described, and have never encountered any difficulty due to clotting of blood in the tube. We do not therefore see any reason for this measure, and we disapprove of it because it increases the risk of contamination which our method was designed to minimize and which it has almost succeeded in eliminating. We have cultured seventy bottles of preserved blood collected at this hospital during the early days of the war, in some cases by junior officers recently introduced to the technique. After removal from the refrigerator these bottles were incubated for twenty-four hours before the cultures were made, and they have all been found to be sterile. This desirable standard of sterility will not be maintained if unnecessary manipulations are introduced.—We are, etc.,

C. R. Boland,
N. S. Craig,
A. L. Jacobs.

Mile End Hospital, London E.,
October 9.

Treatment of Fractures

Sir,—In an annotation of Trueta's book on war wounds and fractures (*Journal*, September 30, p. 694) the closed-plaster or Winnett-Orr treatment of infected fractures is described as a method which "contrasts sharply with all accepted surgical principles." This observation is inaccurate and should be corrected, because it encourages a prevalent and somewhat dangerous view that the Winnett-Orr technique is a no-drainage method.

The treatment is actually based on four accepted surgical principles—namely, excision of wounds, free drainage of infected tissues, immobilization of injured soft parts as well as of bone, and protection from oedema by firm external support. The only practice which is abandoned is that of frequent inspection and dressing of the wound, and this is not an accepted surgical principle. It is a practice which is often harmful, has been given up in the treatment of varicose ulcers, and is rapidly disappearing in the treatment of other wound infections. But because the wound is covered with plaster and is not dressed it does not follow that it is not drained. The observation that "no provision is made for drainage or dressing" is very misleading. Provision *must* be made for drainage, and the drainage must be wide, free, and generous. Every infected plane must be freely incised, every recess carefully packed, and the wound converted into a wide open crater. Treatment should in fact be guided by the usual and accepted principles of surgery. The only instinct which the surgeon need suppress is that of demanding a clean dressing. Discharge is harmless even if it accumulates in the dressing and plaster.

Having accepted this, the results are no longer to be described in the terms of your annotation as "extraordinary," "astounding," "revolutionary." What is more reasonable than to immobilize a fracture, drain the wound, and refrain from meddlesome interference? Why should we be astounded that the fracture unites and the wound heals? It is true that by this technique limbs can be saved however grossly comminuted the fracture, however severe and widespread the infection, and however complete the destruction of skin. It is true that amputation has almost disappeared from the repertoire of the traumatic surgeon, and that the mortality has been reduced to a negligible fraction. It is a fact, moreover, despite your reviewer's suggestion, that the method has already been tried out fully in this country in many hundreds of cases over a period of no less than ten years, and that in several fracture clinics it has long been adopted as part of routine treatment. The crushed and mangled limbs of severe motor crashes, which differ in no respect from the injuries of modern warfare, are restored to normal in a very large proportion of cases. But the technique will gain its deserved popularity by proving its soundness and reliability rather than by proclaiming it as an astonishing departure from accepted principles.

Furthermore, we must recognize that it is the second-best and not the first-best treatment of an open fracture. However efficient the treatment of an infected fracture may be, recovery can never be so rapid, so certain, or so complete as when the infection is avoided. The ideal treatment of an open fracture is to convert it into a closed fracture at the first possible moment, and in this way to gain the advantages of rapid union and freedom from bone infection, sequestration, muscle fixation, and adhesion formation, which characterize the repair of closed fractures. The wound is completely excised, devitalized tissue in which organisms can multiply is removed, haemostasis is secured, *no catgut or any other foreign body is buried*, and the skin alone is sutured. A Thomas's splint, plaster slab, or plaster cast with a large window is applied, the wound is exposed to the air to keep it dry, and the limb is elevated to prevent oedema. In many cases first intention healing is secured and recovery is complete in less than half the time which is necessary for the treatment of an infected fracture. Moreover, if the excision fails and infection develops nothing has been lost. The skin sutures are promptly removed, the wound is packed with gauze, and treatment is continued as for an infected fracture.

The two methods are complementary, and the highest standards of fracture treatment demand that both should be used. I submit that the indications are as follows:

Excision and primary skin suture to be used as the first line of treatment, open drainage and enclosure in plaster to be adopted only when this has failed: (1) if the wound is less than six or eight hours old; (2) if the skin flaps can be sutured without tension; and (3) if the patient can be under observation for a few days.

Excision, free drainage of wound, and complete enclosure in plaster to be used: (1) if the wound is more than six or eight hours old; (2) if the skin has been avulsed or is of doubtful viability; (3) if the skin flaps cannot be approximated without tension; and (4) if the patient must be evacuated at once and cannot be kept under observation.

Amputation to be performed only when the main artery is destroyed, so that gangrene is inevitable.—I am, etc.,

Liverpool, October 6. R. WATSON-JONES.

⁂ We welcome Mr. Watson Jones's criticism of our review of Professor Trueta's book, but still maintain that the results obtained by Trueta's methods can truly be described as "astounding."—ED., *B.M.J.*

Anaesthesia in War Time

SIR,—Since the war of 1914–18 the spinal route has gained prominence for anaesthesia of the abdomen and legs. Its usefulness during hostilities merits more notice than "G. D. G." gives it in his admirable discussion in the *Journal* of October 7 (p. 744). Some arguments follow.

In war, hospital organization has to prepare for big rushes of work and for transplantation, since hospitals may have to move suddenly. Cutting down "impedimenta" counts, in which respect "spinal" scores. The handy Luer-Lok syringes and needles, heralded by Pilkin and beautifully adapted to thecal work, fit compactly in a pocket case, and twelve ampoules of anaesthetic pack into a cardboard container. The relative uniformity of dose facilitates use. Posturing the patient preparatory to puncture is routine, and will, of course, entail extra care in already wounded patients, and, in some leg wounds, a small dose of evipan. It is fair to assume even in a C.C.S. that tables could be sloped into a mild Trendelenburg position.

Administration takes but a few minutes. Supervision may be left to an experienced nurse showing aptitude for reassuring patients if timid. The anaesthetist fully conversant with the technique, having injected the drug and seen the operation proceeding satisfactorily, would be available to render the same service to a second patient, and so on, dealing with four or more cases in the course of an hour. Multiple surgical teams often work in one large theatre or adjacent theatres, and the anaesthetist would be on call to deal with a threat of unexpected deterioration in any patient. Great economy in apparatus and personnel results and helps the staff to cope more quickly with sudden crowds of casualties. Subsequent management of the patient is easy and orderly, involving little more than the rule of the recumbent posture for a day or two. It is, in fact, automatic, as the patient is self-controlled, whereas restraining the violent antics of strong men during recovery from (or induction into) general anaesthesia often greatly taxes the nursing personnel and wounded structures. It avoids the danger of using inhalants where a patient arrives with mucosa already inflamed by poison gas or ordinary respiratory infections, and eliminates the risk of ether explosions, which is no less in circumstances of war.

The value of spinal anaesthesia may, from the foregoing, seem assured. Before adopting it we must also cater by other means for wounds above the mid-dorsal region and comply with two requisites. First, an anaesthetist (or sometimes the surgeon) should be skilled in the procedure. Intrathecal injection entails certain refinements in administration which, like its possible pitfalls, are only mastered by experience. Secondly, investigations of the ability of the war wounded to withstand the fall of blood pressure consequent on spinal anaesthesia must be carried out. Thus, exsanguination (as in ruptured ectopic gestation) is a partial contraindication. Shock from wounds of leg or belly is not necessarily a bar, for when the pain derived from the wound is eliminated by the anaesthetic the comfortable relief not only calms but revives the patient. The resilience of a soldier's physique diminishes some of these dangers. The best single guide to safety of spinal anaesthesia will be the blood pressure, which is tested as a pre-operative routine. Already doctors of belligerent States may have collected manometric evidence on this crucial point. Certainly such data are essential prior to the regular use of the method for war wounds. As a possible boon to hospital authorities and the victims of war, spinal anaesthesia may have a place in war surgery, as it undoubtedly has in peace.—I am, etc.,

Bristol, Oct. 14. A. WILFRID ADAMS.

SIR,—The remarks of "G. D. G." call for some comment. It can hardly be denied that chloroform and ether anaesthesia, requiring as it does nothing more complicated than bottle and mask, is likely to prove the most widely applicable method under war conditions, but the insistence on Shipway's apparatus largely removes the advantages of simplicity and portability, and even familiarity, to a large number of medical men.

Chloroform has acquired a bad reputation mainly for two reasons—the frequency of cessation of breathing during deep anaesthesia and the occurrence of primary syncope. The cessation of breathing that so commonly occurs is the main cause of so many anaesthetists and surgeons disliking chloroform intensely; it gives everyone concerned such a fright. Yet Dr. Primrose of Glasgow has pointed out that this is really the action of a defence mechanism of the body to prevent fatal overdosage. It is an indication to cease administration of the anaesthetic, and the patient will recover spontaneously. It is, however, the statement that chloroform and ether are suitable agents for the rapid induction of anaesthesia and, still more, the suggestion that analgesia and not full anaesthesia is all that is required before commencing operations that arouse the most serious misgivings.

It was pointed out to me some years ago that in cases of primary syncope under chloroform it nearly always happens that (1) the patient was not fully anaesthetized, and (2) some manipulation, however slight, had been begun. I am convinced that it is for this reason that such procedures as manipulations, circumcisions, etc., have a particularly bad reputation in this respect. The operation is short, there is a tendency to give just a "whiff" of anaesthetic, and the shock-producing part of the procedure is reached early. To avoid this catastrophe no anaesthetist should be hurried in the induction of chloroform and ether anaethesia, and nothing whatever should be done until full anaesthesia is reached. The old adage, "plenty of air and plenty of chloroform," should be taken to mean not chloroform in large doses but deep enough anaesthesia. "Plenty of time" would be a better expression. Lastly, my recent experience would indicate that as regards recently qualified men capable operators of the more common gas-oxygen machines are not likely to be as scarce as might be supposed.—I am, etc.,

Burnley, Oct. 12. A. DUFF.

SIR,—Your correspondent "G. D. G." gives the impression that in the last war British and French anaesthetists showed a superiority to their American colleagues by their fearless use of chloroform, and praises their greater speed in administration. His opinions are based on war-time experience and as such deserve respect, but might I quote from Henry K. Beecher's *Physiology of Anaesthesia* (p. 256):

> "For years laboratory workers have been warning of the dangers inherent in the use of chloroform; yet the employment of this toxic agent continues in many clinics, chiefly abroad. Presumably the users justify this course by considering that damage follows the use of chloroform only in the exceptional, badly managed case. This is not correct. It has been rightly said that chloroform anaesthesia is synonymous with chloroform poisoning. . . . Susceptibility to the drug varies greatly from animal to animal and from man to man. A brief anaesthesia with chloroform may produce little liver damage or it may prove fatal."

Laboratory experiments show that in *every* case of chloroform anaesthesia some liver damage is produced. The extreme (and unpredictable) case constitutes delayed chloroform poisoning, but in all the others a less degree but analogous form of poisoning is produced, which increases to a maximum for forty-eight hours after the administration. Much work has been done on this, and surely it does not become the British to belittle the more reasoned attitude of the Americans to the agent. Even apart from laboratory work, it is known clinically that the special inherent dangers of chloroform administration—relative overdose and primary cardiac failure—are particularly formidable, especially in the young athletic type, the very class of patient which, as your correspondent points out, is the one under consideration, and especially in the emotional and terrifying surroundings which are known to predispose to hyperadrenalism and consequent ventricular fibrillation.

If hurry must be a factor to provide for, why cannot the safer agents, as vinesthene, alone or in combination with ether, be used for induction prior to ether? The accumulated knowledge of a century should be sufficient to relegate chloroform to a last resource, to be used when no other is available. It is as well to remember that the first warning fatality in chloroform induction occurred in no more than a year following its introduction as an anaesthetic agent.—I am, etc.,

Birkenhead General Hospital, Oct. 7. R. L. WYNNE, D.A.

Radium Precautions

SIR,—Having read Mr. A. R. Greatbatch's memorandum (*Journal*, October 14, p. 782) I am surprised that it was ever considered necessary to stop radium treatment, and I am more than ever pleased that the Royal Sussex County Hospital did not send its radium to be buried in London (a curious place to choose anyway), but continued to use it.

Excluding bomb treatment, the amount of radium employed in any one case is not large, and the chance of that patient being blown to bits (a necessary precursor to the scattering of the radium) must be very small. I wonder how many patients in Barcelona were actually blown to bits while in hospital. It is true that we anticipate bigger raids, but (1) our defences are much better, and (2) London, for example, is much bigger and the patients, therefore, more dispersed.

With regard to the storage of radium not actually in use, I regret that although the Board of the Royal Sussex County Hospital granted my request that we should continue to use our radium, they decided to avail themselves of the generous offer of a member of the Board to pay the cost of a borehole, and to proceed with this work, which, in my opinion, is quite unnecessary. The chance of a direct hit on any one building is small: the chance of one particular part of the building being hit is even smaller. What, then, are the chances of a bomb passing through roof and floor after floor of a substantial building (gradual resistance as against solid concrete), penetrating into the basement, through sandbags, and waiting to burst until it strikes a small steel safe containing drawers of comparatively plastic lead, in which the needles lie—and these needles must be finally burst open if radium dust is to be expelled. It is a common experience that even if this extremely unlikely sequence of events occurs the masonry of a building is likely to fall in over the damaged lower parts, and so spread would be prevented.

It is quite obvious that in war one must take certain risks. In this war we run the risk of being over-organized to such an extent that by the time we have carried out all the safety regulations we shall have no heart to strive for victory. I suggest that we should go about our work as nearly normally as possible, even if this means taking risks. In this way we may preserve our patients' lives and our own morale.—I am, etc.,

Hove, Oct. 14. H. J. McCURRICH.

SIR,—As provincial radiologists may we say how much we endorse Dr. S. Cochrane Shanks's letter in the *Journal* of October 7 (p. 741).

This is an evacuation area, and since the war our population and demands for radium treatment have increased, more especially as many cases formerly sent to London hospitals have now to be treated locally. In spite of this fact the Radium Commission saw fit to bury our stock of radium at the outbreak of war, and no information is forthcoming as to when it will be returned. We fear that if the date of its return is delayed patients may be buried as well as radium.—We are, etc.,

G. P. NORMAN.
Eastbourne, Oct. 9. E. OWEN FOX.

SIR,—May I reply briefly to Mr. Stebbing and Professor Russ (*Journal*, October 14, p. 782). There is a deep and growing anxiety in the minds of many of the profession about the existing radium situation: a feeling that the risks of radium being scattered by bomb explosion are remote, and that the risks of poisoning from this scattering are still more remote. May I suggest that the Radium Commission issue a statement indicating the evidence for their belief that the risks of poisoning from radium inhalation were grave enough to warrant withholding, during the past six weeks, radium treatment from those who urgently needed it.—I am, etc.,

London, W.1, Oct. 16. S. COCHRANE SHANKS.

Gas Protection for Tracheotomy Cases

SIR,—In the *Journal* of September 16 (p. 622) Mr. W. A. Mill refers to the necessity of providing gas protection for tracheotomized patients. It may interest readers to know that a patient here who underwent total laryngectomy by Mr. Colledge last April has had his gas mask adapted by Messrs. Mayer and Phelps. The canister has been removed from the mask and is now carried strapped to the front of the chest. A stout rubber tube connects it with a soft rubber attachment similar in appearance to the face-piece of a gas-anaesthesia apparatus. This is fastened over the tracheotomy opening by means of a strap round the neck. The rest of the mask simply constitutes a protection for the face and eyes, and is not connected with the canister.—I am, etc.,

Glasgow, October 10. DEREK BROWN KELLY.

Treatment of Pulmonary Oedema from Gas

SIR,—After reading Colonel E. M. Cowell's articles about chemical warfare (*Journal*, October 7, p. 736, and October 14, p. 778), may I suggest the treatment of pulmonary oedema of gas casualties by the immediate intravenous injection of 10 c.cm. of a 10 per cent. or, still better, 20 per cent. calcium solution. This injection has already proved effective for a long time in many types of acute oedema, toxic or angioneurotic. Its effect seems to depend on two factors. The hypertonic solution withdraws extravasated fluid back into the circulation and at the same time the calcium reduces the permeability of the capillary walls.

Since the technique is simple, requiring only a 10 c.cm. syringe and an ampoule, it would be possible to give this treatment at a first-aid post. It is to be expected that the results would be best if the injection were given as early as possible, perhaps even prophylactic. There are many calcium preparations for intravenous injection. At the moment the most satisfactory ones are, in my opinion, solutions of calcium laevulate, available up to 10 per cent., or calcium glucono-galacto-gluconate, available up to 20 per cent. The last preparation is also suitable for deep intramuscular injection.—I am, etc.,

London, W.5, Oct. 15. H. L. WINTER.

Psychological Casualties in War

SIR,—It is regrettable that Dr. Maurice Wright has not seen fit to answer the criticisms of his two articles on psychological casualties during war in your issues of September 9 and 16. I made my last letter (September 30, p. 701) vigorous enough, I thought, to stimulate a response, and Dr. Wright will be aware that the validity of a writer's views is bound to be questioned if it is seen that he is not prepared to support his opinions when challenged. On one point in particular I asked for evidence—his statement that there were very frequent relapses among those cases treated by rapid methods. From

Dr. Wright's silence one can only assume that the evidence is not forthcoming, and that the assertion was made, as I suggested, purely on theoretical grounds.

The letter of Dr. J. A. Tippet (*Journal*, October 7, p. 742) appears to provide a partial answer to the question. He says, in reply to Sir Arthur Hurst, that in the course of his work in different "shell-shock" hospitals he saw relapsed cases from Seale Hayne. This was only to be expected; it is a reasonable assumption that relapses occur with every form of psychological treatment. But that is not the point. Dr. Wright's argument was that "very frequent relapses" took place after rapid methods of treatment, and so far no evidence has been brought forward to substantiate it.

Dr. Tippet's experience as a battalion medical officer evidently differed from mine. No doubt he had longer experience in that sphere than I had, particularly as he says he saw many neurotic cases returned to duty after treatment, most of which, no doubt, were from his own battalion. He makes the statement that men, treated by rapid methods and returned to the line, "if they did not relapse were generally quite useless as no one felt inclined to trust them in an emergency." The operative word here would seem to be "as." Of course, if these returned cases were looked upon as a species of psychological half-caste they naturally would become less reliable. I have published records of ten patients with typical "shell-shock" treated by me as battalion medical officer who were able to return to duty in the line after a few days' rest and treatment, and to the best of my knowledge carried on perfectly capably afterwards. With your permission, Sir, as it provides an important illustration of the point, I should like to reproduce a brief description of a case published in 1918 (*Canad. Army med. Bull.*, September, 1918).

> Private B., aged 27, was on duty in the front-line trenches when three trench mortars exploded near him. He was brought down to the aid post with the help of two stretcher-bearers, and when seen sat huddled up, trembling, and shivering in very limb. He looked a limp nervous wreck and could scarcely stand without support. His mind seemed dominated by an obsessing fear; he kept groaning and moaning and started at practically every sound. His hands jerked and trembled so much that he could scarcely pull off his gloves when asked to do so. He had considerable difficulty in speaking; it took him about two minutes to give his regimental number in jerky tremulous accents. He complained of pains in the head and giddiness. He was given morphine and kept for the night in the aid post. The following morning he had greatly improved; he was able to stand up without support, was calm and composed, and spoke without difficulty. The shaking had gone, with the exception of a tremor of the hands. He complained of headache and giddiness, and declared that he had no memory of being brought down to the aid post the night before. The last thing he remembered was being at the entrance to a dug-out after the second trench mortar had fallen. He was kept under observation in the aid post for six days longer; by that time all his symptoms had disappeared with the exception of the amnesia, which still persisted, and he was sent back to duty. He was still serving with his company a month later when I left the battalion.

If Dr. Tippet means his remarks to be taken as a general statement that all cases of "shell-shock" who returned to the front line after treatment were useless he is demonstrably mistaken. As I have previously recorded (*Journal*, July 8, p. 63), I have known men to obtain decorations for bravery after an attack of "shell-shock."—I am, etc.,

London, W.1, Oct. 14. FREDERICK DILLON.

Psychological Treatment Centres

SIR,—Dr. A. C. D. Telfer issues a call to psychotherapists to enlist in service "for defence of the nation's nerves" (*Journal*, October 7, p. 743). Most of us are at present awaiting the call for service with mental casualties, and one can but agree with Dr. Mayer-Gross and others who deplore the lack of arrangements for ensuring early contact between therapist and civil casualty.

As to the local medical officer of health being the "rallying-point" for a psychiatric service, public health services are not so lightly established. What of the local government committees, education and finance? What of the taxpayer and ratepayer? The psychological point of view is spreading slowly, but many public bodies need convincing. But have we, as a body, been very convincing? In what would Dr. Telfer have us enlist; and having enlisted, how would we serve? As psychiatrist to a county authority I discovered some of the difficulties.—I am, etc.,

London, W.1, Oct. 9. R. LOUIS ROSE.

War Hospitals Supply Depots

SIR,—I should be very grateful indeed to any of your readers who can let me have, through your columns, advice and suggestions on the following points regarding the war hospital supply depots. Working parties, to supplement the equipment of Service hospitals, are now actively engaged throughout Great Britain and Northern Ireland. Much of the work they are doing is based upon experience gained in the last war, but changes have taken place in twenty years, as, for instance, with the treatment of the septic wound, which has been changed by many from Carrel-Dakin irrigation to the closed vaseline dressing of Winnett-Orr. Plaster-of-Paris will therefore be used much more than before, and the question arises whether the available stocks of proprietary prepared bandages (in tins or cartons) are sufficient, or should the depots undertake this work? If so, should the dry book-muslin bandages be prepared or should the finished bandage (complete with plaster-of-Paris) be made and preserved in tins?

Bed sand-bags do not feature in the official list—although surgeons' masks in three sizes and abdominal swabs in several varieties, following Army pattern, are being made in most depots—and yet sand-bags almost always seem to be insufficient. Should they be covered with waterproof sheeting, which is easily cleaned by a damp cloth from blood, urine, pus, etc., or by thick calico, which is easier to sew, more serviceable, and more lasting? Sphagnum moss gives rise to another question which is constantly being asked and which should be settled before quantities of this material are collected. Is it needed and is it of any value? It is not yet possible to be certain whether there will be a scarcity of cotton-wool and cellulose in the future, but one wants to be sure that sphagnum moss, if collected, is really going to be used and not thrown out as it was in many places in the last war. The collecting, drying, picking, and placing in bags is too tedious and too wasteful of time unless the result is really worth while. Many nurses found that sterilizing was impossible and that the smell became unbearable, whilst the patient found the dressing about as comfortable as a bag of straw upon his abdomen. Is there any specific therapeutic value in the moss *per se*? Amputation stump caps are not included in the official list, and yet these will save endless dressing and do away with the bandages which only hold on with the greatest difficulty to a conical stump.

These are only a few of the many practical questions which are being asked daily. An answer and suggestions from practising surgeons with practical knowledge of dressings and materials would be greatly appreciated.—I am, etc.,

Belfast, Oct. 10. IAN FRASER.

Specialization in Treatment of War Wounds

SIR,—I am so keen on the subject of specialization that I feel I must put forward a few ideas on the subject.

In the last war we all had to learn by experience what was the best way to treat a wound, but as the war went on cases came to be more and more grouped under men who had had special experience in a particular class of case. My experience was with chest wounds, of which I reckoned about one thousand passed through my hands. In these cases I found it essential to keep a daily record of the physical signs, such as the position of the apex beat, the level and extent of any dullness present, etc., as the signs could alter so quickly. That is only a small detail, but my point is that gun-shot wounds of the chest should be under men who have had experience in such cases. The same applies to gun-shot wounds of the brain, face, abdomen, thighs, etc. I do not think that in war time specialization can be carried too far. My job was to see all chest wounds on admission, decide whether operation was necessary or not, have the foreign body located by *x* rays, and send the report to the surgeon with the patient for removal of the foreign body. After operation I looked after the patient until he was able to be evacuated to the base.

Of course one got mixed cases of chest and abdomen, chest and spine, wounds of the heart, etc., but I am sure that, so far as possible, specialization in one particular line saves lives and prolonged convalescence.

I used to come across American doctors operating on our men at C.C. stations long before any American troops were in the line. In that way they learnt experience on our men, which always worried me at the time; some were quite good surgeons and some were not.—I am, etc.,

Swanage, Oct. 12. W. A. Rees.

Organization of First-aid Posts

Sir,—I have read with keen interest Dr. C. Seely's article on this subject in the *Journal* of September 30 (p. 697), and also Dr. W. N. Leak's able comment (October 7, p. 744). I do not think it is fair either to the patient or to the members of first-aid parties to leave responsibility for disposal of cases in the hands of these men. My experience during the last war was that properly trained men were capable of rendering immediate first aid and bringing the patient to the doctor, from whom the patients were able to receive such further attention as was needed to prepare them for transport to the advanced dressing station, but that few were capable of "exercising discretion in the initial disposal of cases."

Surely the medical officer of the first-aid posts should have this responsibility? The aid post would then be able to discharge its proper function, as laid down in E.M.S./Gen/245, "to arrest haemorrhage, relieve pain, and so prepare those casualties who may be found to require institutional treatment that they can be transferred to the receiving hospital with the least possible harm—that is, by having taken steps to prevent any immediate deterioration." At the first-aid post the patients would receive the immediate and preventive treatment of shock recommended by Colonel E. M. Cowell (April 29, p. 883), and the minimum necessary wound treatment, morphine, serum, etc. Patients would be sent on to the receiving hospital when it was ready to deal with them. The first-aid post would then be fulfilling the important function of "acting as a buffer to the receiving hospital, and so preventing it being overcrowded by the less seriously wounded" and the moribund.—I am, etc.,

Stalybridge, Cheshire, Oct. 10. Eric M. Molesworth.

Manzullo's Tellurite Test for Diphtheria

Sir,—The Manzullo application of potassium tellurite to pharyngeal exudate attracted considerable attention. Your pages in June, 1939 (pp. 1273 and 1275) describe results given by the test which may be misleading.

With the encouragement of Dr. E. C. Benn, the superintendent of the Leeds City Hospital for Infectious Diseases, I have tested 200 successive patients admitted with membrane or exudate. The problem was, Would the Manzullo test help the clinician? Of 113 patients who appeared clinically to be suffering from diphtheria, 103 (91 per cent.) gave a positive swab, while only 96 (85 per cent.) gave a positive tellurite result. Of the 17 tellurite negative, 15 gave a positive swab and one proved fatal. Thirty-nine patients "clinically negative" gave 37 (95 per cent.) negative swabs, while only 21 (54 per cent.) gave a tellurite negative result. Put in another way—of 152 patients, 113 appeared positive clinically and 39 negative; this diagnosis was supported bacteriologically in 92 per cent. while the tellurite test agreed in only 77 per cent. In the "doubtful" clinical group (48 cases), 35 (73 per cent.) were bacteriologically positive, but of these only 18 (37 per cent.) were positive by the Manzullo method also. In this doubtful group the bacteriological evidence, essential for final diagnosis, was supported by the tellurite result in only 23 cases (18 positive, 5 negative)—that is, 48 per cent. One must therefore conclude that the test is of no real help to the clinician, who must found his treatment in the first place on clinical signs.

Professor McLeod very kindly examined cultures from all the 200 cases. There were 75 gravis, 61 mitis, 1 atypical intermedius, and three untyped positive.—I am, etc.,

Leeds, Oct. 5. Hester E. de C. Woodcock, M.B., D.P.H.

The Patellar Sign and Osteo-arthritis

Sir,—Dr. T. C. McCombie Young's letter on patellar crepitus and osteo-arthritis in your issue of September 30 (p. 702) is very welcome as it provides exactly that control group which it is impossible to obtain in a rheumatism clinic—a fact recognized by Dr. McCombie Young, who has indeed done us signal service by his observations. He is, however, mistaken in suggesting that a positive patellar sign is held at the Charterhouse Rheumatism Clinic to be an indication of the actual onset of osteo-arthritis.

It is a fact that every case of arthritis, without exception, whether the knees are affected or not, gives a positive patellar sign. Therefore patellar crepitus in a rheumatic patient obviously constitutes a threat that osteo-arthritis might later develop. Drs. Walker and Sandell have recently demonstrated in a series of sections that crepitus is due to fibrillation from destruction of cartilage. It is for this reason that patients suffering from muscular rheumatism, fibrositis, bursitis, or synovitis are grouped according to the patellar sign. If this is negative even those with quite severely swollen joints are labelled as synovitis or capsulitis, since these clear up and leave no trace. If positive, then even the mildest of rheumatic cases is placed in the group named "early osteo-arthritis" (although osteo-arthritis under proper treatment will seldom develop). The term "early osteo-arthritis" may not be strictly logical, but it must be remembered that it is applied only to rheumatic patients and not to healthy individuals.

Dr. McCombie Young finds that in 15 per cent. of his recruits cartilage was degenerating. The bearing on the aetiology of osteo-arthritis is obvious, and the percentage does not seem too high considering the prevalence of that disease in later decades. Can Dr. McCombie Young tell us whether the 15 per cent. of positives (*a*) gave a family history of cripples, and (*b*) had suffered from rheumatism (excluding fever) in childhood? If not, possibly in further examinations of recruits these questions might be resolved. No doubt the records will be available, so that in future we may find some of this group developing osteo-arthritis, thus confirming our view at the Charterhouse Rheumatism Clinic that osteo-arthritis is a disease which attacks people whose cartilage is constitutionally vulnerable and therefore easily damaged by friction.—I am, etc.,

London, W.1, Oct. 12. H. Warren Crowe.

Vitamin C in Black-currant Juice

Sir,—I should like, through the medium of your columns, to bring to the notice of my colleagues in the medical profession the virtue of matured, freshly expressed, black-currant juice syrup. The vitamin C content (77 mg. per 100 c.cm.) is 50 per cent. higher than that of the common citrus fruits—as a matter of fact it is considerably higher than that of any of the fruits easily obtained in England. Oranges and lemons may possibly soon be difficult to obtain, by reason of either cost or scarcity. Black-currant juice syrup forms a very efficient, in my opinion a better, substitute. Being depectinized it is easily tolerated by all, and especially by children of all ages. It is prepared in England from English fruit. The following is an analysis of its content.

Sugars.—Fructose, 25.4 per cent.; glucose, 26.0 per cent.; sucrose, 1.7 per cent.

Ash.—0.36 per cent.

Iron.—11 parts per million.

Vitamin C.—77 milligrammes per 100 c.cm. by volume, or 61 milligrammes per 100 grammes by weight.

The added sugar is inverted to glucose in the process of maturing. There is also a small proportion of organic iron.

I have for about a year prescribed this syrup in all my cases of gastric and duodenal ulceration, whether acute or chronic, with marked benefit. In all cases it has been well borne and in my opinion has mitigated symptoms.

There is evidence in medical reports that vitamin C is valuable in maintaining the integrity of terminal blood vessels. Possibly ulceration and haemorrhage in the intestinal tract may be due to vitamin C shortage. Being myself a general practitioner, cases of this type are not sufficiently numerous, and the period of observation is too short to enable me to make a full investigation on these lines. Perhaps someone with access to a large number of cases may be sufficiently interested to test this theory. I feel it has great possibilities. The fact that black-currant juice syrup has so large a content of natural vitamin C—and is most pleasant to the taste—may be a valuable asset in treatment. We know that ascorbic acid is a constituent of vitamin C, but if the presence of vitamin P be confirmed, then vitamin C must be looked upon as a complex. I may add that a daily dose of 1 to 1½ oz. contains sufficient of this vitamin to maintain "good health." In cases of acute peptic ulcer the dose can be increased to 3 or 3½ oz.—I am, etc.,

Bristol, Oct. 9. W. H. A. ELLIOTT.

Medical Students in War

SIR,—May I support Mr. R. B. Buzzard's protest (*Journal*, October 7, p. 746) against Dr. Elliot's reference to the emergency war service of medical students. The Minister's answer is tantamount to an accusation of profiteering if they are paid for their services. Why should not these willing and valuable auxiliaries be paid on a sessional basis, and on the same scale as that in force for panel practitioners when engaged in the same type of work? I would go further than Mr. Buzzard and assert that senior medical students by reason of their recent intensive training in hospital and casualty work, their youth, amenity to discipline, and physical fitness, constitute ideal assistants in casualty clearing hospitals. Furthermore, being free from the ties and abstractions of medical practice they can give their whole time to the service during an acute emergency. In these circumstances they are as much entitled to payment for their services as any other category of personnel on the pay-roll of the Ministry.—I am, etc.,

Bradford, Oct. 14. A. HAYES SMITH.

Evacuation

SIR,—On reading the "Medical Notes in Parliament" in the *Journal* of October 7 (p. 751) I was struck by Mr. Henderson Stewart's question regarding "the serious bodily condition of so many of the persons recently evacuated and whether an immediate inquiry into the health services of the cities of Scotland" should not be ordered.

I think the problem has been the same in every reception area, though perhaps more so in some than in others; and a certain percentage of children have arrived suffering from vermin, scabies, or impetigo. These three conditions are recognized as being most frequent among those who have an inherent dislike for soap and water; and if personal and domestic cleanliness were more universal "the large sums spent on the health services in the cities of Scotland," and elsewhere for that matter, could be considerably reduced.—I am, etc.,

Felton, Northumberland, Oct. 10. E. A. WELSH.

"Black-out" Problems

SIR,—Housewives, with their many anxieties, are being worried and made nervous by repeated calls from wardens who complain even of a glow through dark curtains, and this although an official notice directs only screening by dark curtains. Such screening appears more than sufficient for any military purpose, for scientific tests from effective air raid heights would show such illumination as an insignificant fraction or *nil*. Looking down from a mountain at 6,000 feet into a valley on a dark night, glimmers from cottages so screened could not be seen. Greater damage may be done to the community in creating neurasthenic states than could result from lighting of this type. Immured in darkened houses "where," in Milton's phrase, "glowing embers through the room teach light to counterfeit a gloom," there is ample cause for melancholy, and every stress should be avoided which may intensify depression.—I am, etc.,

Ilford, Oct. 10. V. J. BATTESON.

Obituary

G. A. SUTHERLAND, M.D., F.R.C.P.

Consulting Physician, Paddington Green Children's Hospital

Dr. George Alexander Sutherland, C.B.E., who died at Amersham, Bucks, on October 10, was born in Aberdeen the third son of the Rev. James Sutherland, D.D. He was educated at the Aberdeen Gymnasium and at the Universities of Aberdeen and Edinburgh. He graduated M.A. at Aberdeen in 1882, and M.B., C.M. of Edinburgh in 1886, proceeding to the M.D. seven years later, having by that time obtained the M.R.C.P.Lond. and studied at Vienna clinics. Dr. Sutherland was for many years physician to the Hampstead and North-West London Hospital and to the Paddington Green Children's Hospital. He was elected a Fellow of the Royal College of Physicians in 1903 and served as president of the Section of Paediatrics at the Annual Meeting of the British Medical Association in Toronto in 1906, and was also president of the Section of Diseases of Children of the Royal Society of Medicine in 1912. In his earlier years at Edinburgh he had been house-physician to the Royal Infirmary, and an active member of the Royal Medical Society. He was the author of *Treatment of Disease in Children*, which went into a second edition, of the *Heart in Early Life* published in 1914, and his Lumleian Lecture before the Royal College of Physicians in 1917 was entitled "Modern Aspects of Heart Disease." He published *Cyclic Albuminuria* in 1900 and edited a *System of Diet and Dietetics in* EFZB. During the latter part of the last war Dr. Sutherland was a consulting physician to the Royal Air Force, and for his services received the C.B.E. in 1920.

HARVEY CUSHING

Sir Charles Sherrington, O.M., G.B.E., writes:

I should be glad if you would allow me, as one of the many who regarded Dr. Harvey Cushing with affection, a few words of personal tribute. It is just forty years since I first had the good fortune to come to know him. It was at Liverpool, and he was then on his way home to America from Kocher in Berne. He called on me at the Physiological Laboratory, and then prolonged his stay with us to some eight months. He was already interested in cerebral surgery. He joined with enthusiasm in the experimental work going forward in the laboratory upon the brain of the anthropoid apes. The day following a final experiment would find him early in the laboratory, devoting himself to making a series of drawings of the undissected brain showing its surface markings, blood vessels, etc., appropriately coloured, providing a valued addition to the maps and protocols of the day before. His drawings were beautifully executed, and the Royal College of Surgeons preserves at least one of them now. He had before coming to the Liverpool laboratory completed a memorable piece of experimental work on the cerebrospinal fluid; the findings of this, with his usual frankness, he put our laboratory fully abreast of, although they had not yet actually seen the light in print. He became at once an "intimate" among our small company of research workers, mostly neurological. He had from all of us respect and affection. When in the latter part of the summer vacation the time came for us all to disperse I know he took with him lasting friendships.

Five years later I saw him in his own home in Baltimore. There I found him, house to house, beside his elder and close friend William Osler. "Close" describes the relation between them altogether too baldly. It was friendship whose intimacy and reciprocal devotion and loyalties can, for those who had not the opportunity of witnessing them in the life, perhaps best be understood from the pages of the "Life" which Cushing in later years wrote of Osler. Surely a "Life" which not the subject of it only but the authorship no less combine to make a tribute our whole profession may regard with pride as an example of brotherhood within its fellowship.

My own contacts with Harvey Cushing were throughout the years an unalloyed pleasure to me. On a trip to America one of the greatest rewards always was to have there a re-meeting with him. Conversely, to welcome him on this side gave when it happened a fresh zest to the whole routine of daily things. It was my privilege to know many of his pupils; if ever a teacher had the affectionate respect of all those who could call him "Master" it was Harvey Cushing. The unequivocal evidence and consciousness of this was, I think we should find, if we could know, perhaps among those assets of his life which he himself most prized. His death leaves our world the poorer by the loss of a personality of transcendent accomplishments and of singular charm.

Oct. 9, 1939.

Mr. Geoffrey Jefferson writes:

Harvey Cushing's was one of those vital personalities, rare in any profession or in any walk of life. Halsted undoubtedly exerted a profound influence upon him during the formative years of his more mature growth, and he was wont to tell an amusing story, too long to relate here, of their first meeting and his conversion from the ultra-rapid methods which were the vogue elsewhere. Halsted's insistence on the utmost care in the recording of every clinical and pathological fact, whether it might seem relevant at the moment or not, on the utmost gentleness in the handling of tissues, on the minimizing of blood loss and shock, on painstaking rather than brilliant operating, met with an instantaneous and understanding response in the young Cushing. He modelled himself upon his master and transferred the Halsted technique to a branch of surgery to which it had not hitherto been applied. His use of iron-dyed black silk for ligatures, his condemnation of catgut, and his applications of silver-foil dressings were copied from his master. The dominant figure in neurosurgery in Cushing's day was of course Victor Horsley, with Macewen looming more silently yet forcefully in the background. Cushing went to London hoping to work with Horsley, but found him so engrossed in his many pursuits that he felt that there would be little opportunity for him to learn. It would be interesting to speculate whether the preoccupation of Horsley with problems of neurophysiology would have left a mark on Cushing's work. His brief stay with Sherrington certainly did so. As it was, the more mechanistic work which he did in Berne on the effects of cerebral compression on blood pressure proved to be extremely useful to him in a practical way. We find him treating his patients and recording his experiences in the journals as if they had been physiological experiments on man. No surgeon in our time has maintained so high a level over so long a period.

Things were already going well for him at Johns Hopkins, where he had risen to be associate professor of surgery, when his bold diagnosis and fortunate operation on the man who was to become General Wood focused attention sharply on him. Cushing once recounted to me the full details of that famous case. He felt sure that it was this operation, witnessed by Cabot of Boston, which brought him to the Moseley Chair of Surgery at Harvard University (1912). The correctness of the choice was made apparent to the whole world by the publication in the same year of his famous book on the pituitary body. It would be absurd to attribute the rise of endocrinology to the fact of this book alone, but there can be no doubt that it profoundly affected medical thought. In 1917 his book on tumours of the nervus acusticus set the seal on his reputation. From that time onwards his work followed on predestined lines. It lay first in the classification of the tumours of the central nervous system, based on the observation that neoplasms tend to occur in certain situations, to be regional in type. It would be untrue to give the impression that this thought had not occurred to anyone else, but certainly Cushing went much further than any of his contemporaries in deducing pre-operatively the probable nature of the tumour from a consideration of the history, of the signs, and of the laboratory tests. His major contribution was something bigger than a study of cell structure. His system of following up his patients, of keeping in constant touch with them, of making them feel that here was a friend as well as a surgeon, enabled him to acquire a remarkable grasp of the natural histories of the tumours themselves, of their duration, and of the expectation of life with different types. His last great book on the meningiomas shows very well what could come out of a systematized clinic. He had planned to write this book with George Heuer when he was at Baltimore, on the basis of twelve cases, and he always said that it would have been a much better and more readable book than the one that finally appeared, which was based on over 300. When one tries to assess the most important contribution made by Harvey Cushing I think that one must give pride of place to the purely humanitarian fact that he had a lower mortality than anyone else, either before him, or contemporaneously. His mortality indeed appeared so fantastically low to some that they openly refused to credit it. There can be no doubt whatever that it was strictly accurate. What perhaps made it more difficult still for the average man to understand was that he spent more hours over a single case than the general surgeon spent upon half a dozen. All the Baltimore School were slow operators, but in neurosurgery there was the more reason for it because there was everything to learn, and because impatience might well lead to disaster. Others did not see that this was the cause of his success and that the Halstedian principles upon which he had been brought up were the foundation of everything.

Many of the great pioneers have been great individualists; it falls to few to found a school. Horsley and Macewen are examples of this lapse in our own country. Cushing attracted people to his clinic from all over the world; they made themselves his pupils, his disciples, and his friends. He had the same nebula of excitement as T. E. Lawrence; few can ever have had such a stimulating personality. The process of stimulation could be somewhat painful to the co-worker, who left "The Chief" to play his part elsewhere fired with an ability which he would never otherwise have developed, yet somewhat ruefully licking his wounds. Few people could be more devastatingly charming than he; few were more ruthless in their onward drive. But if he drove others, he also drove himself. There was a strong streak of tenderness in his personality that drew one irresistibly to him, a trait very readily recognized by his patients. He was strangely incurious about other people, and though he liked to hear about them he never gossiped. There is no doubt that he was a great artist; there was something electric about him, a stimulus to be got obtainable nowhere else; the sick instantly felt confident in him. His ideal was of the highest: the arduous and ascetic advancement of learning. Considerations of money never entered into his calculations, and although he had a sufficiently lucrative practice he disparaged fees out of proportion to the service rendered. Though often in great discomfort, it was characteristic of him that he never mentioned his own ailments and even actively discouraged discussion of them—an unusual human trait. In his later years, when he alternated between a wheeled chair and the most incongruous bursts of activity, he still retained all his old fire. His entrance to a room could be relied upon to have the same effect: that sudden heightening of interest, that anticipation which was so rarely disappointed as that unexpectedly deep voice was heard and as those lean fingers intertwined. Harvey Cushing was truly one of the great figures in medicine of all time. He has set a standard of performance which we shall not forget, even though we cannot equal it.

J. D. COMRIE

Dr. HARLEY WILLIAMS sends the following appreciation:

The late John Dixon Comrie will be remembered by generations of Edinburgh students for his lectures on the history of medicine. This course was not compulsory for the degree, but the minority who were curious enough to attend the first meeting all became Comrie's adherents. A tall, stooping figure, he would slink into the room wearing the old-fashioned high collar above which a face with exceedingly black eyes and moustache scanned the small but faithful band. He would show one slide after another by a small lantern on the bench before him. Bending over in the light of the carbon arc, his huge shadow thrown up behind, Comrie resembled a humorous Mephistopheles, and he described the wonders of medical history in an unscholastic but very interesting way. It was not mere knowledge out of a textbook; his information, like his pictures, had been gathered over years, and his slides were a miscellaneous collection of portraits, maps, manuscripts, and famous scenes. He would expound them with an air of modest enthusiasm as if he shared the astonishment of his audience. Ever since those lectures my notions of Hippocrates (with a photograph of the island of Cos), of Avicenna, and Vesalius (shown in his great lecture theatre), the martyrdom of Servetus, and the circulation of the blood (with illustrations from Harvey's writings) are founded on Comrie's penetrating descriptions. He knew exactly the way to make vivid the distant situation, and with a conjurer's art he could produce exactly the picture needed to complete his effect. His students owe to Comrie their insight into the tremendous background of medicine. He was born in Buchan, that north-east shoulder of Scotland above Aberdeen. Perhaps from that stern coast came his laborious persistence in acquiring materials for his writings on medical history. He was too absorbed in such things and had too logical a mind to develop the large practice which his skill justified. But he was not a mere collector of relics and memorials, for he could make the design to fit them. He rescued names from oblivion, and his own will be remembered, as he had the gift of fixing for the benefit of the future many otherwise forgotten aspects of the changing face of medicine.

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We regret to announce the death on September 24 of Dr. CHARLES J. J. HARRIS of Moresby Hall, Whitehaven. Educated at the Royal Naval College and Charing Cross Hospital, he took the L.S.A. in 1883, the English conjoint diplomas in 1897, and the M.D. of Durham in 1901. As a young man he became house-surgeon to the Whitehaven Hospital, and after three years began general practice but retained his connexion with the hospital, and at the time of his death was an honorary consulting surgeon, a member of the general committee, and a life governor. Dr. Harris was a strong exponent of the outdoor life and was associated with the Boy Scout movement for more than twenty-five years, becoming County Commissioner for Cumberland, and received the long service medal. During the war he served with the Border Regiment and later with the Artillery Brigade, rising to the rank of major. Whitehaven miners, for whom he worked for so many years, owed him a deep debt of gratitude. During the Wellington pit disaster in 1910 he risked his life in penetrating into the distant workings with the rescue parties, and for this he was awarded the King Edward Medal. Dr. Harris took a keen interest in the municipal health service, in the work of the St. John Ambulance Association, and of the British Legion. He was a member of the Cumberland and Westmorland Antiquarian and Archaeological Society and joined the British Medical Association as long ago as 1887. Full military honours were accorded at the funeral at Moresby Parish Church on September 27.

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Dr. AUGUSTUS MAYBERRY WHITESTONE, who died on October 7 at Hollingbourne, near Maidstone, had practised there from 1894 until his retirement some years ago. Born in Dublin on October 29, 1856, the son of Berkeley Whitestone, he was educated at Armagh Royal School and Trinity College, Dublin, graduating B.A., M.B., B.Ch., and taking the L.M. of the Rotunda Hospital in 1883. He was for three years assistant surgeon to the County Down Infirmary, and after settling in Kent at Hollingbourne became medical officer to the local workhouse and the hospital for infectious diseases, and public vaccinator. In his student days Dr. Whitestone was a leading rugby football player, representing Dublin University and Ireland. He had been a member of the British Medical Association for fifty-six years.

Universities and Colleges

UNIVERSITY OF OXFORD

In Convocation on October 12 the Vice-Chancellor, Mr. G. S. Gordon, President of Magdalen, made his annual speech, dwelling particularly on the influence of war, and the prospect of war, upon university life. With regard to the Faculty of Medicine he said that the decision to evacuate London had thrown on the University of Oxford "the obligation of providing our medical students with clinical training, a new and formidable experiment which the Regius Professor and his colleagues are tackling in great style. And it has filled, or is filling, more than half our colleges with Government officials."

UNIVERSITY OF CAMBRIDGE

MEDICAL STUDENTS UNDER WAR CONDITIONS

With a view to expediting the qualification of medical students who have resided for six terms, and are so well advanced in their studies as to be ready for the clinical instruction which is normally received elsewhere and cannot be provided within the University, the Council of the Senate has resolved that medical students who have completed two years of residence and have qualified in anatomy and physiology be allowed to count residence while attending approved courses of clinical instruction away from Cambridge. For the benefit of students who wish to expedite those parts of their medical training which are done within the University, the General Board recommends that candidates for the Final M.B. Examination be not required to have obtained honours in a Tripos or, being over the standing for honours, to have attained the honours standard in the Natural Sciences Tripos; and a Grace putting into abeyance for the present Regulation 8 (*d*) for the degrees of M.B., B.Chir. is to be submitted to the Regent House.

RETIRING VICE-CHANCELLOR'S ADDRESS

At a Congregation held on October 2 Professor H. R. Dean, M.D., Master of Trinity Hall, resigned the office of Vice-Chancellor and made an address to the Senate on outstanding events in the past academical year. Among the deaths of resident members of the University he mentioned Dr. Charles Cyril Okell, whose contributions to bacteriology had added much to knowledge of the origin, detection, and prevention of bacterial diseases. The Vice-Chancellor said that the new Anatomy Laboratory was finished just before the beginning of the Michaelmas Term and had been in use throughout the year. Speaking of recent events he said: "In sharp contrast to the confusion and uncertainty which marked the crisis of September, 1938, the outbreak of war found members of the University prepared and ready to undertake unaccustomed duties. Many members of the University staff have already left Cambridge to hold commissions in the fighting forces or posts in the Civil Service. Those who remain in the University have cheerfully shouldered some extra burden of labour or responsibility. Our country possesses in the undergraduates and younger graduates of the Universities a supply of young men admirably equipped to take a leading part either as officers of the fighting services or in the study of the scientific and technical problems on the solution of which success in modern warfare depends. In the difficult times which lie before us young men trained in Cambridge laboratories are well fitted both to advance and to employ scientific knowledge for the maintenance and improvement of national defence. . . . During the earlier months of the year and during these last few weeks the Cambridge Colleges have met most willingly the requests made to them on behalf of the Government or by the Colleges of the University of London which sought their hospitality. . . . Within a few days of the outbreak of war the students from the London Hospital and from St. Bartholomew's began to work in Cambridge. They have been joined by our own students, and the laboratories of the Medical School have presented for some weeks a scene alive with all the many activities of Full Term. But the teaching work of the University will not be confined to the laboratories; for, as a result of the Government's decision to defer the obligation of military service for men below the age of twenty years, the Colleges expect a large number of Freshmen. Undergraduates whose services will not be needed by the Government in the immediate future will begin or continue their studies at the University, with the knowledge that by their work at Cambridge they will make their best contribution to the welfare of this country."

The following candidates have been approved at the examination indicated:

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—*Part II:* E. H. Allen, R. B. Boal, A. H. Brockbank, O. C. Levine, H. M. Marks, M. P. G. O'Brien, S. R. Reynolds, K. V. Shetty.

UNIVERSITY OF MANCHESTER

Dr. D. D. Cranna has been appointed Assistant Lecturer in Anatomy.

The following candidates have been approved at the examination indicated:

DIPLOMA IN PUBLIC HEALTH.—*Part 2:* H. S. Bagshaw, Jessie R. Davidson, H. N. Osborne, F. Stratton, H. Williamson. *Part 1:* Mary A. Rogerson.

UNIVERSITY OF SHEFFIELD

Mr. C. D. P. Jones, F.R.C.S., has been appointed honorary demonstrator in anatomy.

The Services

CHEMOTHERAPEUTIC AGENTS FOR SEPTIC WOUNDS

PROPHYLAXIS AND TREATMENT

The following memorandum concerning the use of sulphonamide derivatives for prophylaxis and treatment of wound infections is being distributed from the War Office to all officers of the Royal Army Medical Corps. It is emphasized that the memorandum is provisional.

War Office Memorandum

Preamble.—Experimental and clinical results having proved the effectiveness of sulphonamide derivatives in the treatment of streptococcal infections and having indicated that these compounds have also an action on anaerobic gas forming bacilli it is recommended that these compounds be given a trial in the field. In principle the earlier the drug is administered the more effective is the result, but some benefit may be anticipated even in well-established infections.

For the time being it is recommended that all wounds which from the clinical aspect appear likely to become the site of secondary coccal or gas gangrene infection should receive a prophylactic course of sulphonamide treatment at the *earliest possible opportunity* and that this prophylactic course should be extended if definite infection supervenes.

Designation of Sulphonamide Compounds in common use.—(1) Sulphanilamide (synonyms: sulphonamide-P, colsulanyde, streptocide, prontosil album). (2) M & B 693 (synonyms: sulphapyridine, dagenan). (3) M & B 693 soluble (synonym: dagenan sodium).

Administration

(*a*) GENERAL PRINCIPLES

(1) A prophylactic course should occupy about 48 hours.

(2) Courses of treatment for established or developing infections should extend over ten days, but if not effective by this time an interval of 48 hours should be allowed before continuing treatment.

(3) When an infection appears to be controlled, as judged by the temperature, small doses should be continued for a further 3–5 days in order to prevent relapses.

(4) The principle of effective treatment is to obtain a high blood concentration of the drug as rapidly as possible and to maintain this concentration at an effective level over a period of time. Because the drugs are rapidly excreted it is necessary, in order to maintain an effective level, to administer four hourly *night and day*.

(*b*) PRECAUTIONS

Certain individuals are unduly sensitive to the drugs and there is no evidence yet available for assessment as to whether persons suffering from shock may not be even more sensitive. The reactions that may occur can be classified as (1) *Mild,* (2) *Serious.* The following is a list of such reactions together with comments as to how they are best avoided or treated.

(1) *Mild*:

Nature of Reaction	Remarks
Cyanosis:	Incidence reduced by prohibiting sulphur containing foods and especially by the avoidance of saline purges and drastic purges. Liquid paraffin the best laxative. Cyanosis may be temporarily dispersed by giving 0.5 to 1.0 g. per day of methylene blue by the mouth. Cyanosis *per se* should not prohibit continuance of treatment.
Acidosis:	Treat by oral administration of sodium bicarbonate.
Drug fever:	Requires to be distinguished from fever due to recrudescence of infection. If true drug fever, omit drug.
Dermatitis:	Omit drug and induce diuresis with water or simple diuretic. May be the prelude of more serious complications. Check leucocyte count if possible.
Dizziness, headache:	If intolerable, administer fluids freely. Check leucocyte count if severe.
Leucopenia:	Negligible unless rapidly progressive to below 3,000 leucocytes per cmm.
Haematuria (MB 693 only):	Administer fluids freely.
Jaundice Neuritis }:	Omit drug. Induce diuresis. (*See* also haemolytic anaemia.)

(2) *Serious*:

Agranulocytosis:	Occurs after 10 days or more of treatment. Incidence rare. Leucocyte count only method of diagnosis. Other symptoms: headache, deterioration of condition, fever, sore throat. Treat by transfusion and pentnucleotide.
Haemolytic Anaemia:	Occurs early (2–4 days). Incidence rare. Mortality low. Early signs jaundice and haemoglobinuria. Omit drug, induce diuresis, transfuse if necessary.

(*c*) DOSAGE

(1) *Sulphanilamide.*—Tablets should be powdered and administered suspended in milk or water.

Prophylaxis.—4 g. (8 tablets) statim followed by 2 g. (4 tablets) in four hours' time followed by 1 g. (2 tablets) four hourly night and day for a period of 48 hours. If infection develops continue as for "treatment."

Treatment.—4 g. (8 tablets) statim followed by 2 g. (4 tablets) in four hours followed by 1 g. four hourly night and day for a maximum period of ten days. If infection is still uncontrolled allow an interval of 48 hours and then repeat the same course from the beginning or, if available, change on to M & B 693. If infection appears to be controlled during the first or later courses reduce dose to 0.5 g. (1 tablet) four hourly and continue for 3-5 days after the temperature has become normal.

Note.—During the first course of treatment if no clinical effect is evident within three days it is recommended that a change be made to M & B 693. But if some clinical effect is obvious it is worth while pursuing the full course of sulphanilamide.

(2) *M & B 693.*—Tablets should be powdered and administered in milk or water. If vomiting is troublesome split the doses and give at shorter intervals, *e.g.*, instead of administering 1 g. four hourly give 0.5 g. two hourly.

Prophylaxis.—3 g. (6 tablets) statim, followed by 2 g. (4 tablets) in four hours' time followed by 1 g. (2 tablets) four hourly night and day for a period of 48 hours. If infection develops continue as for treatment.

Treatment.—The same procedure as for sulphanilamide except that the initial dose is 3 g. (6 tablets) instead of 4 g.

(3) *M & B 693 Soluble.*—This substance is of great value when swallowing is impossible or when gastric upset prevents absorption of the oral compound. It consists of a 33 per cent. solution (1 g. in 3 c.c.). Injections are best made intramuscularly, but as the solution is alkaline some reaction at the site of the needle puncture is common unless care is taken to inject deeply and avoid escape into the subcutaneous tissues. The solution may also be injected intravenously if the dose is diluted with 20 c.cm. of sterile distilled water or normal saline. The drug may also be added in suitable quantity to intravenous drop transfusions of saline or blood (at the rate of 1 g. per four hours).

Dosage Prophylactic and Treatment.—1 g. (1 ampoule) four hourly night and day, the prophylactic course being completed in 48 hours. The treatment course may be continued for ten days, but it is strongly recommended that a change over to the oral compound be effected at the earliest opportunity. The soluble compound finds its best use in the initial phases of a course of treatment and should not be regarded as a substitute for the oral compound; it should only be used for a continuous course when oral therapy is impracticable.

HONORARY PHYSICIAN TO THE KING

Colonel F. Whalley, D.S.O., T.D., T.A., has been appointed Honorary Physician to the King as from July 7, in succession to Colonel H. T. Bates, O.B.E., T.D., T.A., who has retired.

DEATHS IN THE SERVICES

Surgeon Captain **Reginald Thomas Alexander Levinge**, R.N. (ret.), died recently at Bournemouth. He was educated at Trinity College, Dublin, where he graduated A.B. in 1882, and in the school of the Irish College of Surgeons, and took the L.R.C.S.I. in 1885 and the L.R.C.P.I. in 1886. He entered the Royal Navy soon afterwards, attained the rank of fleet surgeon on February 22, 1904, and became surgeon captain on October 3, 1908. As surgeon of H.M.S. *Alecto* he served in the punitive naval expedition commanded by Rear-Admiral Rawson in 1897, and landed with the force sent to punish the King of Benin for the murder of the members of a political party, and took part in the capture of Benin City on February 18, 1897. When Lieutenant-Commander Pritchard was shot Surgeon Levinge took command of the party and led it with success. He was mentioned in dispatches and received the General Africa Service Medal, with Benin clasp.

Lieutenant-Colonel **James Burne Lapsley**, M.C., I.M.S. (ret.), died at Mont Cantel, Jersey, on October 7, aged 55. He was born on August 16, 1884, was educated at Queen's College, Cork, and graduated M.B., Ch.B., B.A.O. of the Royal University of Ireland in 1907. He entered the Indian Medical Service as lieutenant on February 1, 1908, became lieutenant-colonel after twenty years' service, and retired on April 20, 1935. He served throughout the war of 1914–18, and received the Croix de Guerre on August 31, 1917, and the Military Cross on June 3, 1918. He was appointed assistant director-general (stores), Indian Medical Service, on November 27, 1926, vice Lieutenant-Colonel G. G. Hirst. He had been a member of the British Medical Association since 1912.

Medical News

The Society for the Protection of Science and Learning has changed its address from 6, Gordon Square, London, W.C., to Scott Polar Research Institute, Lensfield Road, Cambridge.

Until further notice *La Presse Médicale* will appear once a week instead of twice weekly as hitherto.

The congress of the Italian Society of Plastic Surgery, which was to have been held at Naples on October 21 and 22, has been cancelled.

The Library of the British Medical Association will be open from 9.0 a.m. to 5.0 p.m. (1.0 p.m. Saturday) until further notice.

By arrangement with the Ministry of Health the out-patient department of the Golden Square Throat, Nose and Ear Hospital has now been reopened.

The Child Guidance Council has changed its address to 23, Queen Square, Bath (telephone: Bath 2390).

Owing to the war the council of the Zoological Society of London has decided for the present to discontinue its fortnightly scientific meetings.

The Ministry of Health in a communiqué dated October 13 announced a visit by the Queen to a casualty evacuation train. Her Majesty was received by the Minister of Health, Dr. Walter Elliot, Captain Euan Wallace, Minister of Transport, and the official party also included Sir George Chrystal, Secretary of the Ministry of Health, Dr. J. H. Hebb, Director-General of the Emergency Medical Service, and Miss K. C. Watt, Principal Matron for Emergency Nursing Services. The primary purpose of these trains is to evacuate air raid casualties from the advanced base hospitals in vulnerable areas to the base hospitals in outer areas. A train crew consists of one medical officer, one hospital train officer, three trained nurses, ten auxiliary nurses, and eight St. John Ambulance Brigade orderlies. Nursing staff is supplied by the Civil Nursing Reserve, and about 400 nurses are employed on the trains. A description of a casualty evacuation train is published in this week's *Supplement* at page 208.

It is announced in the *Times* that eighteen Egyptian medical men resident in England have, through the Egyptian Ambassador in London, offered their services to the British Government wherever they can be useful in the present circumstances. The Secretary of State for Foreign Affairs has expressed to the Egyptian Ambassador the Government's high appreciation of these generous offers.

On October 13 two claims against the Corporation of Croydon in respect of the death of two schoolboys in the Croydon typhoid epidemic were disposed of in the King's Bench Division by Mr. Justice Stable on payment of agreed damages aggregating £1,638.

Dr. J. Trueta, late director of the department of surgery, General Hospital of Catalunya, Barcelona, will read a paper on "The Organization and Treatment of War Casualties" before the Section of Orthopaedics of the Royal Society of Medicine (1, Wimpole Street, W.) on Tuesday, October 24, at 2 p.m. Members of the Sections of Anaesthetics, Medicine, Surgery, and United Services are invited to attend.

Dr. Richard W. B. Ellis, assistant physician to the Children's Department of Guy's Hospital, and joint editor of the *Archives of Disease in Childhood*, left London on October 12 for Rumania as one of a delegation of three from the Friends' Service Council to inquire into the possibilities of relief work among Polish refugees. The delegation are taking with them a grant from the Anglo-Polish Relief Fund for immediate use in necessitous cases.

Medical Notes in Parliament

The House of Commons this week made progress with a Bill to suspend local elections and the registration of electors. The Prices of Goods Bill was down for second reading. Debate arose on the adequacy of the allowances for the families and dependants of soldiers and on war pensions. Statements were made in both Houses on the progress of the war and on air attacks against Great Britain.

At a meeting of the Parliamentary Medical Committee on October 13, Sir Francis Fremantle in the chair, a report was received of the visits paid by Sir Francis and Dr. Haden Guest to first-aid posts and on suggestions made to the Ministry of Health. Sir Francis Fremantle also reported on his interview with the chairman of a local regional committee and a consultant specialist about the defective organization of a public assistance institution as a civil emergency hospital owing to lack of co-operation between the local authorities concerned. The Parliamentary Medical Committee discussed the petrol ration to medical men, on which Sir Francis Fremantle had introduced a deputation of the British Medical Association to the Minister of Mines. Other subjects considered by the Committee included the disabilities of consultants in the civil emergency scheme; the under-employment of medical officers in hospitals, civil and military, at present empty; the medical care of dispersed military units in the United Kingdom, and the departure from the United Kingdom of military units without vaccination or inoculation. The Committee decided not to take action on the allocation of war wounded between military and civil hospitals. It agreed to represent to Sir Kingsley Wood the desirability of appointing women medical officers for service with women's establishments attached to the Royal Air Force.

There has been presented to Parliament the report of Lord Weir's conference on war damage to property. This conference has failed to find or devise any practicable or justifiable scheme for mutual protection against the risk of war damage to fixed property in private ownership. A promise of State assistance is renewed.

Commandeered Hotels at Spas

In the House of Lords on October 11 Lord GREVILLE adduced complaints against the commandeering by the Government of hotels at British spas. He said many thousands of sufferers from rheumatism, including miners, sought treatment each year at these spas. In war time the number of these people was likely to be increased. In consequence of exposure on military service there would arise, as the last war showed, many cases of rheumatism, neuritis, arthritis, and kindred elements. He asked whether any competent medical authority had been consulted when hotels at spas were commandeered. He understood the Ministry of Health occupied itself in commandeering accommodation for lodgings. Were the medical men who lived in these spas consulted? In some places practically no accommodation was left.

Earl STANHOPE regretted that inconvenience had been caused to individuals. The Government had to take precautions to ensure the functioning of the Departments dealing with the social services such as national health insurance, and to see that alternative accommodation was available in the event of air attack. Large buildings had to be found, and few provincial towns save spas and holiday resorts afforded accommodation suitable for offices. Three spas had been reserved for those who might suffer from rheumatism as a result of service with the Forces. That had been considered by a committee representing the Ministry of Health and the Service Departments. There was not actually a doctor on that committee. He was advised that accommodation would also be available for the public who required treatment, though not such good accommodation. Facilities at most hydropathics were still available for the general public.

Army Medical Services in France

Mr. HORE-BELISHA announced on October 11 that 158,000 men had been transported to France within five weeks of the outbreak of war. Sir FRANCIS FREMANTLE asked whether full provision had been made for the health of the troops on the medical and sanitary sides. Mr. HORE-BELISHA replied that the Director-General of the Army Medical Services was acknowledged by the medical profession to be a man of the highest reputation. Civilian doctors were satisfied on the whole with the skill and powers of organization of the R.A.M.C. The medical profession had a free hand to do everything which was of advantage. He would willingly hear suggestions from Sir Francis Fremantle.

Hospital Treatment of London's Civilian Population

Dr. ELLIOT told Sir Ralph Glyn on October 12 that there were normally approximately 97,000 hospital beds in the metropolitan police area, excluding beds for mental patients. Under the Emergency Hospital Scheme an additional 14,000 beds had been set up in hospitals in the outer parts of the area. Approximately 13,000 beds had, for the time being, been closed in certain of the inner hospitals. Beds now available in the metropolitan police area numbered 98,000. Approximately 55,000 were immediately available in hospitals in the area of the London Sector Scheme (which was rather larger than that of the metropolitan police area). These could be used either for casualties or for ordinary sick in need of in-patient treatment. Hospitals had been instructed to admit to their unoccupied beds all cases requiring in-patient treatment.

Dr. ELLIOT further told Sir Ralph Glyn that many of the beds in the general hospitals were available for children, and although figures did not distinguish children's beds from adults' beds, he understood that in general there were beds for all requiring hospital treatment. The ordinary hospital services remained available. There should, therefore, not be difficulty in obtaining specialist treatment for children who remained in London.

Mr. PARKER asserted on October 11 that out-patients from London hospitals, who had been told to attend their local hospitals during the war, had now been told to go to a local doctor. Miss HORSBURGH answered that no instruction had been given under the Emergency Hospital Scheme that persons who normally attended at hospitals for out-patient treatment should go to a local doctor instead. At the beginning of the war some London hospitals temporarily closed their out-patient departments of their own volition, but most of these had now been reopened.

House Officers and the E.M.S.

Mr. PARKER asked on October 12 whether the sector officers in charge of the Emergency Medical Service in various districts were consulted before the dispatch of the letter of dismissal from the Service sent out by his Department on October 6 to a large number of doctors. Dr. ELLIOT answered that the letter was sent out in error. All Group Officers had now been advised as to the actual position of the doctors in question. The Ministry of Health would fulfil obligations incurred during the past five weeks to the doctors.

Release of Doctors from E.M.S.

Dr. ELLIOT stated in reply to Sir Ralph Glyn that as regards the release of members of the medical profession to carry on their normal duties, arrangements had been made whereby doctors could either go on indefinite leave, subject to recall if required, or (with the exception of doctors filling posts as registrars, house-physicians, and house-surgeons) go on part-time service under conditions recently drawn up in accordance with the advice of a committee. That committee was as follows: Sir Bernard Docker (chairman); Dr. G. C. Anderson, Sir Girling Ball, Dr. H. E. A. Boldero, Lord Dawson, Mr. C. H. S. Frankau, Sir Cuthbert Wallace, and Sir Charles Wilson. The conditions referred to were:

1. Each officer who was transferred to part-time would make his services available to the State, if required, for the equivalent of four days in every week, the remainder of the time being at his own disposal. The precise manner of giving effect to this condition—that is, the particular days or parts of days when the officer was to be on call—would be a matter for arrangement with the medical superintendent, subject to the approval of the Group Officer. A record of the times when the officer attended for duty would be kept by the medical superintendent.

2. He would receive a retaining fee equivalent to one-third of the salary which had been already offered to him. This fee would cover any services rendered under the previous paragraph so long as he remained on a part-time basis.

3. Should circumstances make it necessary he would be required to resume whole-time, in accordance with the undertaking he had given, and in that event payment of the full salary would be resumed.

4. No officer who elected to go on part-time would be eligible for an allowance for board and lodging or for travelling between his home and his official headquarters.

5. Similarly, such officers, being no longer whole-time temporary civil servants, would not be entitled to official leave or to sick pay during temporary absences due to illness.

Emergency Hospital Scheme: Payments to Hospitals

In a reply to General Sir Ernest Makins on October 12 Dr. ELLIOT said payments in respect of beds reserved for air raid casualties were at present being made only to voluntary hospitals. They were made fortnightly. The total payments so far made for the first fortnight amounted to approximately £170,000. This figure would be subject to considerable adjustment in the light of additional information from the hospitals following the payments. This system enabled the country to have many beds ready and staffed for casualties which would not otherwise be available. He did not consider the provision being made against air raid casualties unreasonable. He was reviewing the list of hospitals where beds were reserved in order to ensure that beds were not being kept empty unnecessarily. Payments to the hospitals were not related to the payments normally made by civil patients, since these did not as a rule meet the whole cost of treatment. Voluntary hospitals were largely dependent on contributions and other charitable sources for the treatment of civil patients, but the Government had undertaken that the cost of treating casualties should be borne by the Exchequer. The Ministry of Health was investigating the claims submitted by hospitals to ensure that they properly corresponded with the actual additional expenditure in which the hospitals were involved by reason of the Emergency Hospital Scheme.

Income of Hospital Medical Staffs

Sir ERNEST GRAHAM-LITTLE asked on October 12 whether Dr. Elliot knew that, as the result of his action in enrolling for full-time service nearly all the medical staffs of the voluntary hospitals in London at salaries which in most cases would hardly defray their house rent, rates, and taxes, he had subjected a large number of the most distinguished members of the medical profession to acute financial stress, inasmuch as they had been suddenly prevented from earning any income from private practice, but were unable to relinquish as suddenly their heavy commitments based on their previous earnings. Sir Ernest suggested some legislative provision such as a moratorium in the payment of rent, rates, and taxes in the case of consultants thus called up for national service. Dr. ELLIOT in reply said recruitment to the Emergency Medical Service was on a voluntary basis. Salaries and conditions for this service were fixed in consultation with representatives of the medical profession. He referred Sir Ernest to the arrangements under which doctors serving in the Emergency Medical Service could go on indefinite leave, subject to recall if required, or, with certain exceptions, transfer from full-time to part-time service. These arrangements should enable the practitioners to whom Sir Ernest referred to continue private practice. Dr. Elliot added that he could not accept the suggestion of a legislative moratorium.

Hutment Hospitals

Dr. ELLIOT informed Mr. Gallacher on October 12 that in England and Wales 104 hutment hospital schemes, of 1,037 huts, comprising 38,120 beds, had been decided upon. In seventy-one of these schemes the estimate of cost submitted by a local architect had been approved and construction of the huts begun. Two of the schemes, comprising twenty-three huts, had been completed, and in several more the roofing and walling had been finished. Medical, nursing, and other personnel would be allotted to the hutment hospitals as they were completed, but he could not give the numbers. As the huts are not in use he could not express any opinion on their functioning, but had reason to trust it would be satisfactory.

Blood Transfusion Organization

Mr. CULVERWELL asked Dr. Elliot on October 12 whether the blood transfusion organization for the London and Home Counties district still took regular donations of blood from registered blood donors; and, since military requirements were provided for by a separate organization which was a special branch of the Royal Army Medical Corps, what was done with this blood given by citizens. Dr. ELLIOT replied that the blood transfusion organization for London and the Home Counties was set up to ensure a ready supply of blood. As blood could only be stored for a limited time, supplies were being continually taken from blood donors. Arrangements had been made with the Defence Services that the stores of blood would be used to supply Service requirements subject to civilian demands being satisfied. Blood which was taken and not used for its primary purpose was utilized for the preparation of serum, a stock of which was invaluable under war conditions.

Answering Mr. David Adams on the same date, Dr. ELLIOT said the chief measure taken for the increase in the supply of blood for transfusion purposes was the setting up of depots on the outskirts of the London region where a store was now always maintained. These depots had been set up by the Medical Research Council and were fully in operation. They would supply blood to the London region and to some districts outside. In the provinces the existing voluntary arrangements had been augmented.

E.M.S. and Voluntary Hospitals

On October 17 Mr. ROSTRON DUCKWORTH asked the Minister of Health whether he was aware of the view held by medical men that there was much unnecessary confusion in the relations of the emergency medical service and voluntary hospitals, and what steps he was taking to ensure smoother working and general satisfaction among those directly concerned. Dr. ELLIOT replied that some initial difficulties were to be expected in putting any large-scale organization on a war footing. His officers were in constant touch with representatives both of the medical profession and of the voluntary hospitals, and necessary adjustments were being made as rapidly as possible in the light of experience gained.

Sanitary Inspectors and the R.A.M.C.

Major MILNER asked the Secretary of State for War on October 17 whether his attention had been drawn to the dissatisfaction of sanitary inspectors at being debarred from receiving commissioned rank in the hygiene companies of the Royal Army Medical Corps, and if, in view of their qualifications and experience in sanitary administration, commissions in the above companies would in future be made available to sanitary inspectors of suitable merit. Mr. HORE-BELISHA replied that as officers of Field Hygiene Sections were called in to advise on all matters affecting the health of the troops, it was essential that these appointments should be held by specially qualified medical men so long as these were available. Major MILNER asked if Mr. Hore-Belisha was not aware that these men had high special qualifications, and if he would not reconsider the matter in view of the fact that commissions in the past had been granted to other than medical men. Mr. HORE-BELISHA said he desired to give the troops the most qualified service procurable, and for that reason commissions in the Royal Army Medical Corps were reserved for doctors. Naturally, one considered any proposals which might be made, but at the moment he could not accede to them.

Vaccination and Inoculation of Oversea Forces

On October 17 Sir FRANCIS FREMANTLE asked the Secretary of State for War if units going over-seas had been vaccinated against small-pox and inoculated against enteric fever; and if units that might be sent oversea were being so vaccinated and inoculated in readiness for over-seas service. Mr. HORE-BELISHA said that the answer to both parts of the question was, "Yes, subject to the consent of each individual." Sir FRANCIS FREMANTLE then asked if Mr. Hore-Belisha was aware that at least one unit of which he knew, and was under orders to go over-seas, was not inoculated or vaccinated. Mr. HORE-BELISHA said that if Sir Francis Fremantle would draw his attention to the unit he would investigate the matter.

Medical Attention of Scattered Defence Units.—Sir FRANCIS FREMANTLE asked on October 11 whether the War Office could arrange for the medical care of anti-aircraft searchlight men and other scattered units to be undertaken by local civil practitioners and release for other duties medical officers on the established strength who were unable to cover the ground. Sir VICTOR WARRENDER replied that the military medical establishments of these units must be maintained. Civilian medical practitioners were employed in cases which regimental medical officers were unable to attend. The ordinary arrangements were then made.

Newcastle's Milk Supply.—Mr. DAVID ADAMS asked on October 12 whether during the last two months both milk supplied under the Milk (Special Designations) Order, 1936, and undesignated milk had shown a serious deterioration when tested for tubercle bacilli by Newcastle corporation. Dr. ELLIOT replied that figures had been sent him by the corporation of Newcastle-upon-Tyne, but were not understood to relate to the presence of tubercle in the milk. He would make further inquiries of the corporation.

Doctors and A.R.P. Work.—Sir RICHARD ACLAND asked Dr. Elliot on October 12 to make every effort to reinstate doctors who gave up salaried posts for air raid precautions work under the impression they would be paid £550 a year and now found they were paid £21 a year. Dr. ELLIOT said he was not aware of any case, but if given particulars he would investigate the matter.

Disability Pensions.—On October 17 Mr. PRITT asked the Minister of Pensions whether he would arrange that every soldier proceeding on active service should be furnished with a document setting out in simple language his rights to receive a disability pension in the event of his being wounded or injured, or falling sick. Sir WALTER WOMERSLEY said he understood that the Royal Warrant in its complete form was to be issued with Army Orders. Article 5 of the Royal Warrant would be construed in a liberal spirit in the light of the expert guidance which would be given by medical officers of very great experience, and would ensure that no material evidence in support of a claim was excluded from consideration.

Medical Students in the Army.—Arrangements have been made for the release from the Army of medical and certain other specialist students provided that they have reached a sufficiently advanced point in their studies. The case of students between 18 and 19 years of age will be considered.

Discharge of Mental Hospital Patients.—The number of persons who were discharged to their homes from mental hospitals under the Emergency Hospital Scheme does not exceed 200. No patient was discharged unless selected after careful investigation of all relevant circumstances, including his home conditions, as suitable to be cared for and supervised by his relatives at home. The Board of Control is reviewing the arrangements for the care and supervision in war time of individuals living in the community who are suffering from mental disorder.

Notes in Brief

In the first nine months of this year 527 persons were killed by accidents at mines under the Coal Mines Act and 2,221 seriously injured.

EPIDEMIOLOGICAL NOTES

Infectious Diseases during the Week

Small increases in the incidence of scarlet fever, diphtheria, and pneumonia (primary and influenzal) have been recorded; although the total incidence of these diseases was much lower than in the corresponding week last year, the rate of increase of all three diseases was comparable in the two years. It is too early to say whether the observed increases are entirely attributable to seasonal influences or are in part due to the re-evacuation of a number of susceptibles back to the large centres of population. Probably little effect in this direction need be anticipated until the schools are reopened generally. It is sufficient to note at this stage that despite the abnormal environmental circumstances of the evacuees and the inevitable disorganization of medical and nursing services, there have been no serious outbreaks of infectious diseases in the reception areas, although the presence of diphtheria carriers gave rise to anxiety in some of them.

Typhoid Fever in 1939

In Europe and the United States of America the situation as regards typhoid fever has remained satisfactory during the first eight months of 1939. Morbidity in most of the countries was about the same as in the corresponding period of 1938 and much lower than in 1937. In the Scandinavian countries and in England the figures were appreciably lower than in 1938. In this country, despite a rise from 96 to 267 during the four-week period ended September 9, notifications have remained well below the median value for the corresponding weeks of the eleven years 1927–37. In France and Germany the total incidence was below the median values, but in Poland the median was exceeded during the two four-week periods ended August 12.

There was little change in the general mortality rates, as in the morbidity rates, in Europe in 1938 compared with the preceding year. As in previous years the highest rates were recorded in Portugal 17 (17.9) per 100,000 population, Malta 6.4 (10.3), Rumania 6.2 (8), Hungary 5.9 (10), Czecho-Slovakia 5.2 (6.3), Lithuania 4.9 (5.5), and Bulgaria 4 (5.8). Rates below 4 per 100,000 population were reported in Poland, Yugoslavia, Greece, and Turkey. (Figures in parentheses refer to the preceding year.)

Twinning in Marmosets.—In forty pregnancies in marmosets twins occurred in 87.5 per cent. In seven instances the sexes of the twins were: two pairs male; two pairs female; three pairs heterosexual. These observations confirm the findings of Hill that two blastocysts fuse completely in early presomite stages, with breaking down of the conjoined chorionic wall, and the formation of a common chorion containing two embryonic primordia. Anastomotic connexions between the umbilical and the placental vessels of the two embryos are established very early. Nevertheless, examination of the gonads and external genitalia of opposite-sexed pairs of foetuses reveals no evidence of freemartin effects.—Observations on Twinning in Marmosets. G. B. Wislocki.—*Amer. J. Anat.* May, 1939, 64, 445.

No. 39

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended September 30, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	19	2	10	2	—	18	2	7	—	1
Deaths		—	2				1	1		
Diphtheria	904	33	170	34	27	1,209	129	195	55	25
Deaths	16	—	3	—	1	30	3	6	2	—
Dysentery	23	3	27	—	—	27	6	19	—	12
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	4	1	1	—	—	2	—	—	1	—
Deaths		—	2				—	3		
Enteric (typhoid and paratyphoid) fever	68	3	6	3	4	41	4	8	8	1
Deaths	2	—	1	—	—	1	—	—	—	—
Erysipelas			62	5	3			55	12	3
Deaths		—	1				—	—		
Infective enteritis or diarrhoea under 2 years ..										
Deaths	55	8	17	11	5	40	9	8	8	4
Measles			6		8			13		2
Deaths	1	—	—	—	—	3	—	—	—	—
Ophthalmia neonatorum	66	4	15		—	78	5	31		—
Deaths										
Pneumonia, influenzal*	312	12	5	—	6	448	33	5	—	13
Deaths (from influenza)	17	—	2	—	1	16	—	2	1	—
Pneumonia, primary			105	7				160	9	
Deaths		4		7	7		15		9	6
Polio-encephalitis, acute	4	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	43	—	—	—	—	56	3	5	1	—
Deaths		—	—				1	—		
Puerperal fever	—	—	9	2	—	3	3	21	6	1
Deaths		—					2†			
Puerperal pyrexia	162	8	24		1	166	14	28		2
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,163	37	193	50	79	1,776	155	380	58	77
Deaths	2	—	—	—	—	1	—	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough			39	—	5			94		7
Deaths	9	2	—	—	—	10	1	3	2	1
Deaths (0–1 year)	308	30	55	31	13	290	38	45	38	10
Infant mortality rate (per 1,000 live births) ..						48	31			
Deaths (excluding stillbirths)	4,078	629	600	157	129	3,919	713	539	177	104
Annual death rate (per 1,000 persons living)			12.1	10.6	11.3	9.6	9.1	11.0	12.0	9.2
Live births	6,263	877	850	384	208	6,521	1,250	807	407	201
Annual rate per 1,000 persons living			17.2	25.8	18.3	16.0	15.9	16.4	27.6	17.8
Stillbirths	235	28	35			275	36			
Rate per 1,000 total births (including stillborn)			40			40	28			

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Deaths from puerperal sepsis.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

B. coli Infection of Kidney

DR. C. S. STORRS (Helston, Cornwall) writes: A young married woman, seven months pregnant, had an attack of *B. coli* infection of the kidney in May. She was acutely ill for forty-eight hours with temperature 103°-104.5°, rigors, and pain in left loin. *B. coli* were present in the tissues. She rapidly recovered under proseptasine. The urine was free from *B. coli* in ten days. At the end of September she had another similar attack. She now asks whether anything can be done to prevent recurrence of these attacks. What can I do about it?

Income Tax

Payment for A.R.P. Lectures

"ASSISTANT M.O.H." has received £8 8s. for first-aid lectures given in 1938-9. How should such fees be assessed?

*** If he were in general practice the fees could be regarded as part of his general professional earnings assessable under Schedule D, but as his existing assessment is under Schedule E in respect of a specific appointment the fees in question must be separately assessed. On that basis they have to be regarded as a new source, and the amount received for work in 1938-9 is chargeable to tax for that year.

LETTERS, NOTES, ETC.

The Aggressive Instinct

Mr. FAUSET WELSH, F.R.C.S., writes from Birmingham: Without being psychotherapists, quite ordinary persons can see the sound sense in Dr. B. H. Kirman's letter in the *Journal* of September 30 (p. 701). For an adult to give direct expression to normal aggressive instinct is, he says, pathological in a civilized community. Can those, then, who in good faith encourage this instinct be sane? Have we not as a profession the obligation to proclaim the correct psychotherapeutic treatment for the disease whether manifested in individuals or communities? Can we not concentrate on preventing and treating disease rather than on preparing elaborate plans against conditions which the same plans must encourage? Some soldiers dislike being bombed and object. Many more civilians will dislike it still more and object more strongly. It seems a reasonable attitude, and attempts to discourage this dislike by encouraging normal aggressive instinct are either childish, pathological, or uncivilized. Surely the rational principle of treating psychological casualties includes removal of the cause if still operative. If we support or encourage this cause we are betraying our trust, and our treatment will be ineffective or productive of further evil. As we are fighting against moral evil medical men and particularly psychologists should know what sort of weapons are likely to be most effective in both attack and defence.

The Flight from Poland

Tragic stories of the flight from Poland are told in a dispatch just received in London, by way of Budapest, from the administrator of the Save the Children Fund in charge of relief work among child refugees near the Polish-Hungarian frontier. Many of the refugees began their flight in the early days of the war, when they escaped from areas overrun by the German armies into territory then still in Polish hands. Then came the Russian invasion and they were again put to flight. For the most part they had to hide in forests during the day, lying on the ground while bombing from the air was going on. Then, at night, they would continue their journey, ill clad, hungry, and with only the smallest remnants of their possessions that they could carry with them. "The psychological effect on the children is terrible," says the Save the Children Fund administrator, who is a psychologist. "They are still in the grip of terror when they come over the frontier to us." As the Fund workers go round the camps, almost every refugee holds out a piece of paper bearing the name of some child, or mother, or husband, who has been lost in the flight. Winter has set in abnormally early in Hungary this year and the refugees are suffering severely from lack of clothing. Most of them set out in what they were wearing at the time, with no change of garments. The Fund is supplying the children with shoes, and with warm sweaters and stockings. It is also distributing flannel which the women can make up into garments for their children now that they have reached the safety of refugee camps. All sections of the Hungarian people are showing great practical sympathy with the refugees, adds this correspondent, and the Winter Relief Fund, of which Madame Horthy, wife of the Regent, is president, has diverted a proportion of its stores, intended for the Hungarian poor, to aid the refugee children. The Save the Children Fund (20, Gordon Square, London, W.C.1) has also begun the distribution of relief to refugees who have found their way into Rumania. In Lithuania the holiday camp of the "Ose" Committee, which is working in connexion with the Fund, has opened as a home for refugee children.

Hair Dyes and Hair Dyeing

Mr. STANLEY REDGROVE continues to unveil to the public the secrets and mysteries of modern cosmetics. The first edition of *Hair Dyes and Hair-dyeing Chemistry and Technique* appeared in 1929 under the title of *Blonde or Brunette.* It is now revised for the second time in collaboration with an expert hairdresser, Mr. J. Bari-Woolls. It is not primarily written by any means for the medical profession but rather for practical hairdressers. Nevertheless, it is a subject that medical men, and especially dermatologists, are frequently consulted about, and if they read this volume they will at all events be better enabled to disguise their ignorance of the subject; they will find the whole question of dyes and dyeing dealt with from a strictly scientific point of view, and will be able to advise their women patients as to what processes it is wise or not for them to submit to at the hands of the hairdresser. We would particularly advise medical men to read the chapter devoted to "para," which is the trade name of paradiaminobenzine or paraphenylenediamine, which is so satisfactory as a hair dye from the cosmetic standpoint that its popularity persists notwithstanding its dangerous properties. Mr. Redgrove says that the ideal hair dye must be perfectly harmless but produce permanent colours equal to those of Nature, and must be easy to apply. It must not render the hair unresponsive to permanent waving, and it should consist of two or three solutions of such a kind that by adjusting the proportions of each any and every possible shade should be produced. We need hardly say that such a dye has not yet been discovered. The book is published by Heinemann at 10s. 6d.

The Canning of Food

A well-produced pamphlet entitled *Canned Foods* has been prepared for the use of domestic science teachers and students by the Canned Foods Advisory Bureau, 243, Regent Street, London, W.1. Members of the medical profession can obtain copies on application to that address.

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PROPHYLACTIC IMMUNIZATION AGAINST MEASLES, SCARLET FEVER, DIPHTHERIA, WHOOPING-COUGH, AND INFLUENZA*

BY

SIR J. C. G. LEDINGHAM, LL.D., D.Sc., F.R.C.P., F.R.S.

Director, Lister Institute, London; Professor of Bacteriology, University of London

The prevention of infectious disease by active immunization methods is no new thing, and I am going to assume that what is chiefly wanted at the moment is some reassertion and fortification of the scientific background of these procedures and some account of their achievements in the field, with a view to rendering them more acceptable to those responsible for the conservation of child life in this country and thus to facilitate much-desired propaganda on the large scale. Whatever may be the reasons—and I hope to suggest some later on—there can be no doubt, I think, that in the field of prophylaxis of the kind we are considering to-day this country has, in the main, been a follower, and, I'm afraid, rather a tardy follower; for, though our laboratory workers have contributed very materially to the knowledge of methods, we have left to other countries the task of trying them out seriously and intensively in the field.

The safety of any method to be applied to man must always be a prime consideration. There must be no risk to life, and even the minor inconveniences, local and general, incidental to the introduction of a prophylactic through the skin must also, so far as possible, be reduced to a minimum consonant with the effectiveness of the product. In the course of securing these desiderata—and I refer here particularly to the diphtheria prophylactics—there have been in the early period of their use, though not in this country, some very few unfortunate experiences that could not have been foreseen at the time but which further experiment explained and taught us to avoid in future. With the introduction of the Therapeutic Substances Act, however, such accidents should never recur if the prescribed rules for the preparation and testing of prophylactics for issue are carefully carried out, and also if those responsible for administering them perform their duty intelligently. We have now the definite assurance that the prophylactics we are here considering are both safe and potent, and, when administered with the care and circumspection that proceed from knowledge, are calculated to cause only quite negligible inconvenience to the subject inoculated.

Diphtheria

Of the five infectious diseases with whose prevention by prophylactic inoculation I am dealing, diphtheria undoubtedly merits chief consideration because we now know quite definitely from field trials in other countries that intelligent and persistent immunization of the child population, starting with the pre-school child one year old, can bring the diphtheria morbidity down to zero. Indeed, as that great pioneer in this field the late Dr. W. H. Park remarked at the International Congress for Microbiology in London in 1936, "The control of diphtheria by specific treatment and specific prophylactic immunization is one of the most gratifying victories of bacteriology." Let me just enumerate some of the landmarks in the history of this matter.

In 1889 Roux and Yersin demonstrated that the diphtheria bacillus elaborated a toxin, and that to this toxin was due the symptom-complex of diphtheria. This led in the first instance to Behring and Kitasato's great discovery of antitoxin in 1890 and to the treatment of diphtheria by passive immunization methods still current and without a rival. The use of diphtheria toxin for preventive purposes was also early foreshadowed, but many years had to pass before the time became ripe for exploring the possibilities of active immunization in diphtheria control schemes. The Schick test, introduced in 1913, gave us most valuable information regarding natural or naturally acquired immunity to diphtheria at various age groups, and now that we have that knowledge we can to a large extent dispense with it, particularly in dealing with young children. It still, however, has its uses as a guide to prophylactic immunization in the older age groups, in which the proportion of Schick-positive persons steadily diminishes owing to increasing opportunities of acquiring immunity through, it is believed, mild or unrecognized infections contracted from their surroundings.

Then came the era of preventive control by partially neutralized mixtures of toxin and antitoxin. Behring introduced these for human use in 1913, and Park and his colleague Zingher exploited them very successfully in New York during the period 1915–23. These partially neutralized mixtures were not ideal immunizing agents, as they were of doubtful stability and their safety was not easily controlled owing to dissociation phenomena under different conditions of storage which I need not go into. They left much to be desired for acceptable propaganda purposes, but nevertheless when administered by good hands and prepared with the necessary care they did excellent service and showed conclusively what could be done in this way to transform a condition of susceptibility into one of more or less solid immunity.

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* Read in opening a discussion in the Section of Medicine at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

The Introduction of Formol-toxoid

The next notable advance was the introduction of modified toxin or toxoid for prophylactic use. Glenny and Südmersen in 1921 recorded the fact that toxin which had been converted into an atoxic product by contact with formalin was capable of immunizing guinea-pigs against diphtheria toxin. Ramon of the Pasteur Institute who in 1922 published the first of an important series of papers on the flocculation that took place in neutral mixtures of toxin and antitoxin, and thereby provided immunologists with an *in-vitro* method of titration, extended his observations to formol-toxoid, or, as he called it, "anatoxine," and found this to behave similarly, showing that its power of combining with antitoxin was unimpaired. In 1924, we are told, he inoculated himself with "anatoxine," and in subsequent years he did much to popularize its use in France and other countries, particularly America. In an address on world experience of formol-toxoid at the jubilee celebrations of the Pasteur Institute last March, Ramon stated that more than three millions have now been vaccinated in France, while in Canada, of a population of ten millions, more than two millions have been immunized. The new antigen was immediately exploited by Park in New York, and by 1935 one million had been immunized in that city. In Paris since 1928 some 50 per cent. of Parisian children have been immunized, and deaths from diphtheria fell from 318 in 1928 to seventy-two in 1938. In December, 1931, it became obligatory to immunize the French soldier against diphtheria and enteric by the use of a mixture of "anatoxine" and T.A.B. vaccine, and since that time tetanus toxoid has been added to the mixture. By the end of 1938 some 800,000 troops had been so vaccinated, and Ramon was able to state that clinical diphtheria was disappearing from the French army. He bemoaned the fact, however, that civilian France, which depended so much on the conservation of its child population, was still too apathetic in the matter of diphtheria immunization, and he looked forward to this procedure becoming obligatory in the civil population. This, I understand, is now the case.

The most arresting figures are gleaned from Canada, where efforts to popularize the immunization of children, on whom diphtheria exerts its worst toll, have been most intense and persistent. Some towns and rural districts in Canada have 70 to 90 per cent. of the child population vaccinated. The experience of the city of Hamilton (150,000 population), which was the first city of this size to attempt to control diphtheria with formol-toxoid, is widely quoted, for no deaths from diphtheria have occurred there since 1930 and no case of diphtheria since 1933. In Toronto, with a population of 650,000, some 104,000 infants have been vaccinated since 1926, and the diphtheria incidence fell in the four years 1930–4 from 164 to 3.5 per 100,000. In 1936 there were only forty-eight cases and two deaths. In New York in 1936 some 75 per cent. of the infant population had been vaccinated. Round about 1924 this city had annually some 10,000 cases of diphtheria with 700 deaths, but in 1936 the cases had fallen to 1,143 and the deaths to thirty-five (or about 0.47 per 100,000 inhabitants. In 1938 the reported cases fell to only 163 in this great city.

It is only when the proportion of vaccinated children reaches 70, or 80 per cent. that, as Ramon says, one sees the real fruits of one's work in a great reduction of the diphtheria incidence, perhaps to zero. We have nothing like this to show in Great Britain. In trials hitherto made in this country the value of prophylactic vaccination against diphtheria can be measured only by the relative immunity of the vaccinated groups as compared with that of the unimmunized. These data are arresting enough, so arresting indeed as to render urgently desirable the immunization of all pre-school children from the age of one year, with a view to the ultimate extinction of this disease from the community. No other method of diphtheria control can offer such prospects. What is the problem in this country?

Our Need of More Intensive Propaganda

The chief medical officers of the Ministry of Health and of the Scottish Board of Health both emphasize the necessity for more intensive propaganda, for the diphtheria incidence remains high and almost stationary. In England and Wales there have been annually some 60,000 to 70,000 cases of diphtheria, with some 3,000 to 4,000 deaths, and in Scotland some 10,000 cases, with 400 to 500 deaths. Sir Arthur MacNalty in his report for the year 1937 informs us that Chester, with 45 per cent. of its children vaccinated, "is probably the best-immunized town in the country." After it come Birmingham, Walsall, Worcester, Leeds, Manchester, and Chatham, "all of which are in the neighbourhood of 35 to 40 per cent." London occupies an unenviable position at the bottom of the list with only some 5.3 per cent. of its child population immunized.

To illustrate what can be done by less intensive or, more correctly perhaps, less effective propaganda so far practised in this country, I may cite briefly from current reports the experiences of the city and county of Aberdeen and of the city of Birmingham. During the period 1935–7 some 16,000 of the 25,000 children on the school rolls in the county of Aberdeen have been immunized, together with some 3,000 to 4,000 pre-school children, the antigen employed being alum-precipitated toxoid (A.P.T.), given by what has come to be known as the one-shot method. It is interesting to note that the parents' consent was obtained for about 80 per cent. of the children attending the county schools, a result most creditable to the intelligence of the Aberdeenshire parent. What has been the effect of this crusade? Among the immunized children there have been since March, 1935, seventy-three notifications of diphtheria, giving an attack rate of 26 per 10,000 children, while among the unimmunized, including some 3,000 known Schick-negatives, the attack rate was 251 per 10,000, or ten times that among the immunized. In the city of Aberdeen active immunization of school children and those of pre-school age began in September, 1936. Unfortunately, parents' consent was difficult to obtain, and only 52.3 per cent. of new school entrants were immunized. During the period September, 1936, to March, 1938, 3,596 children were immunized, of whom fifteen contracted diphtheria, giving an attack rate of 0.4 per cent., whereas among the non-immunized the attack rate was 1.5 per cent., or nearly four times that among the immunized. There were no deaths among the immunized, and the disease was mild.

In the city of Birmingham an immunization crusade was started in 1925, the agent used being toxoid-antitoxin mixture (T.A.M.) in three doses of 1 c.cm. at fortnightly intervals. Those completely inoculated under the age of 15 in 1938 numbered 96,446, or some 42 per cent. of the total population in that group. As for the pre-school group under 5, about 27 per cent. had been immunized by the end of 1938. The total cases of diphtheria in the last five years have varied from 1,019 to 1,359, and the deaths from sixty-three to eighty-four annually. Only fifty-six cases in all have occurred among the inoculated children, and there have been no deaths.

It is quite clear from these illustrations that it will be necessary to increase greatly the percentage of those immunized before evidence is obtained of any material fall in the general diphtheria incidence.

The Antigens and their Administration

Now let us consider as briefly as possible the problem of antigens and schemes of administration appropriate to each. The Chief Medical Officer of the Ministry of Health remarked in a reference to this subject in his report for the year 1937: " It is unfortunate that the exact technique, preparation of vaccine, and method of administration are still matters of medical controversy. It is probable that the lack of a general standard has militated against the more general adoption of anti-diphtheritic immunization in this country." I would consider this a rather unfortunate statement. Though admittedly there is no general standard, the lack of one has been an advantage rather than otherwise, for it has stimulated valuable comparative field trials, and for several years now we have learnt to know more than one type of antigen which, when administered appropriately, is capable of reducing diphtheria incidence materially. Progress has been impeded by many factors, and not least by what a recent leader writer in the *Journal* calls that "doltish prejudice," not confined to any one social or intellectual stratum, which is fostered by anti-social societies posing as the protagonists of liberty. When liberty becomes anti-social and impedes the application of scientific truth to the improvement of human well-being then I think some form of compulsion is the only remedy, though one might hope it would be merely temporary, pending the wider diffusion of scientific knowledge in the community. I might add that I should have liked to see a far more encouraging lead on the part of health authorities generally, from the Ministry of Health downwards, while giving all credit to those enlightened health authorities who have tried their best.

We have at least four antigens which we know to be potent—namely, F.T., T.A.F., A.P.T., and T.A.M. F.T., or formol-toxoid, has done marvellous service in France, Canada, and the United States, though in the latter country A.P.T. is now largely used, while T.A.F., or toxin-antitoxin floccules, A.P.T. (alum-precipitated toxoid), and T.A.M. (toxoid-antitoxin mixture) have been more popular in this country. The general tolerability of these antigens undoubtedly differs, although possibly some workers with large experience have laid more stress than others on the expediency of guarding against unusual reactions during immunization by performing preliminary detector tests. The Canadian workers who have used F.T. for the most part emphasize the value of Moloney tests, particularly in older children and adults, while in France the matter of unusual reactions with the same antigen has not been greatly stressed.

T.A.F. and T.A.M. are relatively innocuous at all ages, while A.P.T. is well borne in young children. In older children and adults it may give rise to painless nodes, which take some time to disappear. A.P.T., by virtue of the slowness of absorption of the antigen and consequent longer stimulus to the antibody-forming mechanism, can give rise, as Glenny, who introduced it, showed, to a considerably higher antitoxin titre, given in a single dose, than any of the other antigens. For this reason it may well become the antigen of choice for young children, the group we wish above all to see in course of time fully immunized, and there is now a consensus of opinion that no countenance should be given to the use of this excellent antigen in any one-shot method.

Antigenic Values Compared

Fitzgerald and his colleagues have tested on batches of children the comparative value of three doses of F.T., two doses of F.T., one dose of A.P.T., and two doses of A.P.T., and have concluded from the results of actual antitoxin titrations that three doses of F.T. give a superior, but not a greatly superior, immunity to that given by two doses of A.P.T. Two doses of F.T. or one dose of A.P.T. yielded by comparison very poor results. On the other hand Volk and Bunney (1939) found that two doses of A.P.T. given at three weeks' interval were superior to three doses of F.T. at similar intervals.

There is no doubt that it is highly expedient that comparative trials should still go on, for it is desirable in planning extensive crusades to determine what form of antigen and what scheme of administration are best calculated to yield the most lasting immunity, due consideration being always given to the tolerability of the antigen or antigens in the interest of acceptable propaganda. On this point Volk and Bunney make a very pertinent remark: "The ultimate basis," they say, "for evaluating a particular scheme of immunization is whether it protects against diphtheria or not, and not whether it confers Schick-negativity or raises the antitoxin level to any definite point." Further, they remark that, "It is entirely possible that a procedure which results in a lower level of antitoxin than some other may still be the method of choice from the public health standpoint—that is, it might be less expensive, easier to administer, and confer a high enough percentage of immunity to be the most efficient use of the public health dollar in prevention of diphtheria."

In an important study by Jones (1938) the comparative value of F.T. and A.P.T. was tested on guinea-pigs, which after immunization were bled every four weeks for a period of thirty-two weeks, their sera being then tested for antitoxic value. This study emphasized the importance of lengthening the interval between the first and the second dose in a two-dose system. He found A.P.T. to be an excellent primary immunizing agent, and he suggested that if an adequate interval elapsed between the first and the second dose it mattered little which type of toxoid was used for the second or later injections. Whether F.T. or A.P.T. was used, it was important that the dose should contain at least 15 Lf. The interval between doses should in his opinion be prolonged to two months or even longer. It may be noted that in the immunization of horses against tetanus or diphtheria toxins the importance of a lengthy interval between the primary and secondary stimuli is well recognized.

I may here summarize for purposes of discussion the main points on which there is already fairly general agreement:

(1) A single immunizing dose of any antigen is not effective if high and lasting immunity is desired, and, where still used in certain localities, should be abandoned. (2) A.P.T. is *per se* a very significantly more effective reagent than F.T., and if the scheme adopted involved two doses only, then two doses of A.P.T. would give higher levels of antitoxin than two doses of F.T. (3) Any one of the three methods in common use—namely, three doses of T.A.F., three of F.T., or two of A.P.T.—will greatly reduce the diphtheria incidence among the inoculated. Further, as A.P.T. is the most effective antigen and is easily tolerated in children under 8, it may be recommended for the primary stimulus and followed at

not less than one month's interval by two doses either of T.A.F. or F.T. Whether to stick to the same antigen throughout is a matter for discussion. (4) With the knowledge that any one of these systems can be guaranteed to reduce incidence, local health authorities contemplating crusades can still provide useful comparative information by employing two different schemes, probably in alternate children. (5) There is general agreement that longer intervals between doses, and specially between the first and the second dose, are calculated to yield superior results. (6) At the start of a crusade in any community children from infancy to school-leaving age should be immunized in the largest possible numbers. (7) As time goes on immunization would be confined to the pre-school children of 1 to 2 years, and when such children go to school it may be very desirable to give a single reinforcing injection. (8) In children over 10, T.A.F. is to be preferred to F.T. or A.P.T. unless preliminary detector tests are performed. (9) Not until some 80 per cent. of the child population under 15 have been immunized will a material decrease in the incidence rate of diphtheria be realized.

Whooping-cough

I pass now to whooping-cough, which, with a death rate per 1,000 population of 0.043 (England and Wales, 1937), comes next to diphtheria, with a corresponding rate of 0.072. In England and Wales 1,750 deaths from this disease were recorded in 1937, practically all in children under 15. In Scotland in 1938 some 6,000 cases were reported, with 111 deaths of children under 1 year and 105 in the age group 1 to 5. As a killing disease of infancy, therefore, whooping-cough closely rivals diphtheria, and undoubtedly its prevention or control by active immunization methods is a challenge to us all. The prospects of such control, in so far as we may judge from results of crusades of quite recent years, particularly in the United States, are now certainly bright, and there is every reason why health authorities in this country should promptly organize immunization schemes on sound lines, with a good prospect of reducing the incidence of whooping-cough among vaccinated children definitely exposed to this highly contagious and distressing infection.

The aetiological agent of whooping-cough is recognized to be the *Haemophilus pertussis*, originally discovered by Bordet and Gengou in 1906. In recent years valuable bacteriological work has been accomplished in identifying this organism in the early catarrhal stages, when it may be found in some 80 per cent. of cases by the cough-plate method, and also in diminishing percentages as the weeks pass. It is a fortunate thing that the organism is a single antigenic type, for it makes immunization by vaccine far more practicable; but it is also most important for immunization purposes that only smooth freshly isolated and virulent strains be chosen, as artificial passage of the organism on unsuitable media is accompanied by degradation of the efficient antigen and by loss of virulence. It is highly probable that failure to choose strains of full antigenicity for vaccine purposes accounted for conflicting results in some of the earlier trials in the past decade, and that there has also been a failure to follow up carefully the degrees of exposure to this disease not only of the vaccinated but also of the control groups. I propose, therefore, to sketch one or two only of some quite recently recorded crusades which were embarked upon with great care and carried out in the most thorough and painstaking manner.

Studies on Whooping-cough Immunization

Kendrick and Eldering's study (1939) was made in the city of Grand Rapids, Michigan, with a population of about 168,650. 1,815 children between 8 months and 6 years were fully vaccinated with thoroughly tested strains from cough-plates, seventy-two-hour growths being washed off the medium, filtered through cotton-wool, and then centrifuged. The deposit was suspended in saline containing 1 in 10,000 merthiolate or 0.5 per cent. phenol and stored till sterile. It was standardized to 10,000 millions per c.cm., and the standard scheme was 4 doses at weekly intervals of 1 c.cm., 1.5 c.cm., 1.5 c.cm., and 3 c.cm. Some local soreness and induration resulted, but systemic reactions were slight or absent. The controls numbered 2,397, and observation was made over a period of forty-four months—March 1, 1934, to November 1, 1937. These 4,212 children were at risk for an average period of 13 months per child, 15 months in the vaccinated group and 11.6 months in the control group.

For any number of vaccinated children in a district a like number of controls were chosen in the same area, and as providing evidence of equality of exposure, both groups, we are told, had a very similar experience with such diseases as measles and scarlet fever.

The follow-up entailed 23,961 visits, or 5.7 visits per child at an average interval of 2.3 months. In 69 per cent. of the children in the vaccinated group, cough-plates were made in accepting the diagnosis of pertussis, and also in 67 per cent. of those in the control group. It is of considerable interest that, in those of the vaccinated group who contracted pertussis, cough-plates were positive in 6 per cent. as against 24 per cent. in the control group.

The results were impressive: 400 attacks occurred in all—namely, fifty-two in the vaccinated group and 348 in the control group. As to the type of attack, "severe" cases formed only 3.8 per cent. of the total in the vaccinated group. In the control group they constituted 13.1 per cent.

Statistically investigated in relation to exposure, the results showed that 12.8 per cent. of exposures in the vaccinated group were followed by pertussis, as compared with 68.5 per cent. in the control group. I may add that this investigation entailed the services not only of the Michigan Board of Health with its Bureau of Laboratories but also of the City Health Department of Grand Rapids, with its health officer and school physician. Local doctors helped in the immunization clinics, and assistance was given by nurses from the Bureau of Public Health Nursing of the City Health Department.

As a corollary to this field trial I would mention a most interesting experiment by Lawson (1939), who attempted to evaluate in mice the prophylactic value of various pertussis vaccines prepared from smooth, rough, and intermediate strains, the test of immunity being the capacity of the immunized mice to withstand an intratracheal injection of 0.05 c.cm. of a virulent culture calculated in the controls to produce a pertussis pneumonia. The results showed great differences in the immunity following vaccination with the various types: 92.6 per cent. survivals occurred among those vaccinated with the smooth strains, while those immunized with the intermediate and rough strains had only 30.8 per cent. and 7.1 per cent. survivals respectively.

One final study reported by Miller and Faber (1939) is worthy of note. This study on whooping-cough immunization was made at a baby clinic in California. Every month a number of infants less than 1 year old were vaccinated with pertussis vaccine given in three doses of 20,000 millions, 30,000 millions, and 30,000 millions at weekly intervals, while a similar number were selected by chance as controls. The vaccine was made from smooth Phase I organisms grown on Bordet-Gengou medium with human blood added. In all, 211 children were vaccinated and 182 acted as controls. All exposures were carefully noted, and, throughout an observation period of two and a half years there occurred among the test group twenty-six exposures which were followed by nineteen escapes, and among the controls twenty-five exposures with three escapes. The "communicability" rate among the vaccinated was therefore only 26.9 per cent., as against 88 per cent. among the controls.

Apart from the results achieved in these trials, which I can only sketch here, the mere reading of the records gives one a lively impression of the courage of the organizers and their determination to probe the possibilities of a method of prophylaxis against whooping-cough in spite of early failures by others, and to endeavour to find out to what factors, whether concerned with the vaccine and its administration or with the interpretation of the resulting data, such failures were most probably due. There is no doubt that a correct evaluation of the method can be made by an organization capable of observing as precisely as possible the exposures of the test and the control subjects and noting the proportion of escapes in the two groups.

Another problem arises here. The age at which a pre-school child, say 9 months, may be submitted to immunization against diphtheria is also the age at which this same child might very desirably be immunized against whooping-cough. What is to be done? I am not aware that diphtheria toxoid has so far been administered in combination with a pertussis vaccine, but I see no reason why this should not be attempted if Ramon's claim holds that the potency of diphtheria toxoid in mixture with T.A.B. vaccine is in no way interfered with and indeed appears to be enhanced. Such mixtures would first require to be tested on animals in which, at any rate, the rise in antitoxin titre can be accurately evaluated.

Before, however, we can embark seriously on well-planned crusades to prevent diphtheria and whooping-cough, one great stumbling-block has to be got rid of, and it is not the stumbling-block of general apathy. It is the stumbling-block occasioned by the fact that many large health authorities either cannot afford or are not sufficiently alive to the necessity for trained whole-time bacteriologists on their staffs capable of organizing and co-operating in such crusades. It is a short-sighted policy to which the Ministry of Health might well direct its attention, because, if persisted in, we cannot hope to keep pace in this country with the progress in preventive medicine registered elsewhere.

Scarlet Fever

With regard to scarlet fever, I think it is fair to say that even if a thoroughly dependable scheme of vaccination with the appropriate streptococcal toxin, the strength of which is measured in skin-test doses, could be recommended and put in practice, the mass immunization of children would not appear to be particularly urgent in view of the benign character of the malady in these days. In the United States the position is similar, and no active immunization against scarlet fever seems to be taking place, though both here and in that country much has been and still can be successfully done to protect nursing staffs and others in institutions. This limited application of the method of active prophylaxis has undoubtedly resulted in a reduced incidence of scarlet fever. A few months ago the Surgeon-General reported to the Office Internationale in Paris that active immunization against scarlet fever had made little progress in the United States, and he gave as reasons: (1) the benign character of the malady; (2) indecision as to the practical value of the method; and (3) the limitations imposed on production of the antigen by holders of the Dick patent. The decision of the Ministry of Health not to give its blessing to the practice of prophylactic immunization against scarlet fever, at least under present circumstances, would seem to be justified, and I do not propose to say anything more about it.

Measles

The possibility of preventing measles or of mitigating its attack by passive immunization of contacts with convalescent measles serum or, it may be, of adult serum, has been recognized for over twenty years, and the method has been practised extensively, but less perhaps with the object of preventing attack than of moderating possible attacks on weakly children who happen to be contacts. A considerable amount of success has been achieved in both directions, but there has been no widespread effort to secure and store the human sera necessary for more than a small proportion of contacts, so that, as a measure calculated to reduce epidemic incidence, it plays only a very minor part. It is unnecessary for me to enlarge on the technique and practice of the method, and I shall therefore content myself with referring briefly to certain difficulties and problems that have arisen in connexion with large-scale experience. In this country the London County Council has during the past decade devoted much attention to measles prophylaxis, and has published elaborate accounts and analyses of its experience both with convalescent and with adult sera. Gunn (1938) in a recent account of experiences during the London measles epidemic (1935–6) draws attention to the fact that there is no method of assaying beforehand the potency of a particular batch of human serum. It is probable, as he says, and as we know for certain in the case of convalescent poliomyelitis serum, that potency may vary greatly and may account for disappointing and anomalous results. Measles prophylaxis by the passive method cannot in his view be greatly extended in scope until immune serum is readily available at all times when required and until deliberate exposure is practised so that non-immunes may have the advantage of attenuation. This, as he says, can be justified only if the efficacy of the serum is proved beforehand and parents or guardians give their consent.

Dr. Gunn raises the question whether the possibilities of active prophylaxis, or of combined active and passive prophylaxis, may not reasonably be exploited further. To use for purposes of active prophylaxis infective material from measles in the early catarrhal stage, as some have on occasion done, would, I am afraid, be a dubious and impracticable expedient. We must wait for further knowledge of the infective agent of measles, and it is slow in coming. The stumbling-block in experimental research on measles has been the difficulty of transmitting the disease with certainty to any laboratory animal and carrying it on in passage. If this could be achieved we would be in a position not only to assay batches of convalescent or adult serum but also to explore the possibilities of active prophylaxis.

Influenza

Influenza, and by that I mean more specifically influenza as we know it in epidemic times, is now recognized to be a virus disease communicable to more than one laboratory animal and capable of being passaged with regularity in such, as well as in the embryo chick membranes. We are therefore in an excellent position to explore in man the possibilities of active prophylaxis, and extensive research to this end is in progress in this and other countries. The position at the moment has been clearly stated by Andrewes (1939) in a recent paper. We now know that active or "living" virus when introduced subcutaneously or intraperitoneally in large doses can protect ferrets from contracting infection by contact and also inhibit the development of lung lesions, but that it does not usually protect them against a test dose of virus administered by the nasal route. When the inactivated virus is introduced subcutaneously in ferrets and mice it will immunize, though less effectively than the "living" virus. Fairbrother and Martin (1939) have shown that elementary-body suspensions obtained from pneumonic lungs of mice, when heated at 57° C., are highly satisfactory immunizing agents for mice when tested for immunity by the nasal route. Both "living" virus and inactivated virus, given subcutaneously to man, induce the development of specific virus-neutralizing antibodies in the blood serum.

One finding, however, which is likely to complicate the problem of active immunization as applied to man is the multiplicity of antigenic types among the strains recovered from different outbreaks of human influenza. These types do not differ so sharply from each other as do the pneumococcus types; but there would appear to be at least four main types, together with others, or master-strains, which contain in themselves most of the major antigens and react, therefore, with the immune sera evoked by all strains isolated from human influenza. The problem raised by this complication, and its bearing on immunization of man as a practical issue, has been dealt with by Dr. Stuart-Harris, who has had especial experience in this sphere of work. Fairbrother and his colleagues claim that these antigenic differences, which are brought to light by the use of the virus-neutralization test, cannot be detected when the complement-fixation test is used, and they suggest that the basic antigen may possibly be identical in all strains. Doubtless research on this problem will be continued with the intensity its importance demands, and we may reasonably hope that some really useful addition to our armamentarium against influenza may emerge.

Conclusion

To conclude, I have written almost entirely from the standpoint of one who has had little opportunity of observing at first hand the difficulties inevitably encountered in attempting to apply effectively results of laboratory research that can be guaranteed to reduce the incidence and mortality of certain of the diseases here discussed. I can appreciate these difficulties, however, and can only regret that what may be called the social impact of medical discovery in the field of prevention takes so long to fructify. In the field of treatment discoveries get across quickly enough, perhaps too quickly. When I reflect that, owing to ignorance, vested interest, or complacency in high places, a municipality is still prevented from ordering the pasteurization of all milk that comes into it, I sometimes despair of getting preventive science across. If a move was made to make diphtheria immunization compulsory, as it is now in Guernsey, we would be told, I suppose, that the Government cannot move in advance of public opinion. In reply I would say that the present time of national stress is rather a favourable one in which to change that policy, and to impose on people what is good for them if they are unable to realize what is good for themselves and their children. It may sound a totalitarian policy, if you like, but in essence it seems to me quite democratic, for it involves a negligible sacrifice on the part of the individual for his own and the common good.

Summary

A survey is made of the position with regard to control of the five infectious diseases by preventive inoculation.

The various diphtheria antigens are reviewed, together with the methods of administration appropriate to each.

The necessity for more intensive propaganda in favour of immunization against diphtheria is urged.

The subject of active immunization against whooping-cough is discussed, and studies of recent crusades abroad are given.

Prophylactic immunization against measles, scarlet fever, and influenza is briefly dealt with.

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OPHTHALMIC SERVICES TO THE CIVIL POPULATION IN NATIONAL EMERGENCY*

BY

Colonel A. IRVINE-FORTESCUE, D.S.O., M.B.
Special Certificate Civilian Anti-gas School, Easingwold

The subject of ophthalmic service in national emergency is a very wide one, and I propose to restrict my paper to an attempt to describe the conditions under which ophthalmologists will have to work in such an emergency. We have all heard many lectures and read numerous articles on conditions in Britain during the next war. Much that has been spoken and written on the difficulties we shall have to face in the event of hostilities strikes one as academic and unreal because of the lack of concrete examples and of descriptions of actual events.

The civil war which broke out in Spain in July, 1936, has afforded most interesting and instructive lessons in the effects of air raids on large cities. Since over 80 per cent. of the population of Britain is urban and approximately one-fifth of our people inhabit Greater London, it is obvious that the problem of defence against enemy attack from the air is a matter which chiefly concerns the town dweller. The city of Barcelona, with a population approximately equal to that of Glasgow, was frequently bombed from the air during 1937 and 1938. The most intensive bombing was on March 16, 17, and 18 last year. During these three days there were thirteen air raids. According to figures obtained from the local authorities by Mr. Langdon-Davies and published in his book *Air Raid*, the resulting casualties were 3,000 killed, 5,000 hospital cases, and 20,000 minor injuries. Statistics obtained by Major N. D. MacRoberts and published in his *A.R.P. Lessons from Barcelona* show that forty-eight large buildings were totally destroyed and 100 buildings, including sixteen theatres and cinemas, were partially ruined. Many streets were completely blocked with debris and remained impassable for days.

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* Read in opening a discussion in the Section of Ophthalmology at the Annual Meeting of the British Medical Association, Aberdeen, July, 1939.

What an Air Raid Means

A good way of grasping what an air raid actually means is to read the official diary of a typical raid recorded at the time by A.R.P. headquarters at Barcelona and reproduced by Mr. Langdon-Davies. The diary runs as follows:

March 17, 1.58 p.m.—Orders received to sound air raid alarm signal.

1.59 p.m.—Presence of five enemy planes reported.

2 p.m.—Calls for ambulances received from eight different points.

2.31 p.m.—Delayed reports received from three further points.

3.50 p.m.—A serious fire is reported.

7.30 p.m.—Casualties in last raid reported as follows: one hospital, 80 dead and 229 wounded; another hospital, 335 dead and 350 wounded. Total, 415 dead and 579 wounded. A large number of casualties were still being dug out of the ruins.

This diary shows that a raid may take place without warning and that many hundreds of casualties may occur in a few moments.

It has not been possible to obtain statistics showing the proportion of eye injuries to total casualties in the air raids on Barcelona, but as a working estimate we may take 5 per cent. total wounded as having eye injuries of some sort. This would give thirty eye casualties admitted to hospital for the above raid and over 1,000 eye cases for the three days of fairly intensive bombing. Authorities appear to be convinced that in the next war the large towns of Britain will be much more intensively bombed than ever Barcelona was. We may therefore expect many more casualties per raid—three to four times the Barcelona figures, say 100 to 150 eye cases in a single raid without gas.

German bombing aircraft can carry over 4,000 lb. of bombs and have a radius of over 1,000 miles, so that no town in Britain can reckon itself safe. It is usual for bombs to be dropped in salvos from groups of aircraft. In the Barcelona case above referred to the group of machines numbered five, but this number may be largely increased.

The Effects of Aircraft Bombs

Aircraft bombs are of three kinds: (1) high explosive, (2) incendiary, (3) gas. In Spain high explosive bombs were the most frequently used and caused by far the greater part of the damage.

HIGH-EXPLOSIVE BOMBS

High-explosive bombs act by fragmentation, blast, and penetration. Pieces of the shell may cause wounds, the violent disturbance of the air set up by the explosive destroys buildings, and casualties are caused by falling masonry and material; or the bomb may penetrate a building and burst in the interior, producing a maximum destructive effect. When a high-explosive bomb bursts in a street there is first a pushing inward of all windows and doors opening on the street in which the bomb fell, and, secondly, a suction action which pulls the fronts of entire blocks into the roadway. These effects are produced up to a radius of 100 to 200 yards from the site of the explosion. It is easy to imagine how large numbers of casualties may occur from the collapse of buildings in this way.

INCENDIARY BOMBS

These bombs are much smaller than high-explosive bombs. The most effective weight appears to be about 2 lb., and thus very great numbers can be carried—1,000 to 2,000 by a single bomber. Experience in Spain shows that a large proportion of incendiary bombs dropped fail to produce fires, but supposing that only one in five was effective, the cargo of one bomber might produce 200 to 400 fires, and for a formation of fifteen to twenty planes these figures would be proportionally increased. We may therefore expect more fires than can be dealt with by the fire service and large numbers of casualties due to burns.

GAS BOMBS AND GAS SPRAY

A discussion of the use and effect of gas bombs is somewhat academic, as such bombs have not been used in Spain and China. But phosgene and mustard can be enclosed in bombs, and mustard can be distributed in the form of spray from the undercarriage of a plane. Also we know that during the great war gas was responsible for 180,000 casualties and 6,000 deaths among the British troops. It is believed that large quantities of phosgene and mustard bombs are being manufactured by certain powers. Aerial attack by gas bombs is therefore a possibility for which we must be prepared.

The gas which chiefly concerns the ophthalmologist is mustard, on account of the serious eye lesions produced by this substance. The lacrimator gases are unimportant from an ophthalmic point of view as their effects pass off in a few hours after the removal of the victim from the gas-charged atmosphere, without special treatment. Mustard, however, is extremely important. The crater of a mustard bomb gives off toxic vapour for days and even weeks; the action of the gas on the body is insidious, no symptoms usually being observed for two or more hours after exposure, and the resulting eye conditions are serious. Aerial bombs are peculiarly suited for the distribution of mustard. More than half the total weight of the bomb is accounted for by the gas content. A 50-lb. bomb will hold 17½ pints of liquid mustard. Further, a gas bomb has little tendency to bury itself, and most of its contents are spread over the ground. The most effective size of mustard bomb is either 50 lb. or 100 lb., and one bomber can carry sixty or more 50-lb. and thirty or more 100-lb. bombs. A 50-lb. bomb will contaminate an area of 360 square yards sufficiently to make a casualty of any unprotected person who enters this area for some days after the burst.

Continental authorities advocate aerial bomb attacks in successive waves of different kinds of bombs: first wave, high explosive; second wave, incendiary; third wave, mustard. The high-explosive bombs will destroy buildings and burst gas and water mains. The incendiary bombs will set fire to the ruins, aided by escaping gas and lack of water. The mustard will hamper the movements of first-aid and demolition parties.

Spray Attacks.—Mustard can be distributed in fine droplets projected from containers suspended from the undercarriage of a bombing plane. Mustard spray may be released from planes at a height so great that these are neither seen nor heard, so that the gas attack may come as a complete surprise, exposed persons having no time to put on their respirators before the mustard spray reaches them.

From the foregoing summary of the nature of aerial bomb attacks it is obvious that we should be prepared for large numbers of eye casualties occurring suddenly and with little or no warning. These casualties will fall into three classes: (1) effects of high explosives, such as concussion injuries and wounds, with or without a foreign body in the globe; (2) effects of incendiary bombs—namely, burns; (3) effects of mustard gas such as conjunctivitis and corneal ulceration.

Organization of Casualty Services

To provide for the numerous casualties that may be expected in the event of air raids local authorities throughout the country are arranging a system of collection, evacuation, and accommodation which will ensure that every victim of enemy action receives appropriate treatment at the earliest possible moment. When casualties are reported by the air raid warden service, first-aid parties of stretcher-bearers with ambulance cars will proceed to the spot indicated and guide or convey casualties to a "first-aid" post, where first-aid treatment will be rendered (and emergency operations performed). From the first-aid post light cases will be sent home, while cases requiring hospital treatment will be conveyed by ambulance car to a casualty clearing hospital, where urgent operative procedures will be carried out and cases re-classified into those requiring prolonged hospital treatment and those likely to be discharged in twenty-four or forty-eight hours. Cases needing prolonged hospital treatment will be evacuated by ambulance car to base hospitals situated in comparatively safe areas. Cases likely to be fit for discharge in a day or two may be retained in the clearing hospital if circumstances permit.

To supplement the organization of fixed first-aid posts there will be in every large town, and also in certain rural areas, mobile first-aid units. A mobile first-aid unit is to consist of a medical officer, a trained nurse, and eighteen women nursing auxiliaries, the latter arranged in three shifts of six each. A scale of drugs, dressings, splints, surgical instruments and utensils, and heating and lighting equipment sufficient for 250 casualties has been drawn up by the Home Office. The articles are packed in a series of portable cupboards, made up on the expanding bookcase plan. The medical officer, the trained nurse, and the equipment are to be carried in a large motor vehicle, and the auxiliary nursing personnel in a second vehicle. It is intended that the mobile unit should be stationed at a hospital, provided that this is not in a congested area. Where it is not practicable to have the unit at a hospital it will be located at a convenient centre on the outskirts of a vulnerable area. When an air raid occurs the mobile unit will proceed to the principal casualty area and open in any convenient building or in the open air. It is not proposed that first aid should be rendered inside vehicles. Mobile units of this type have been found most useful in Barcelona and Madrid.

It would appear that the provision of mobile first-aid units is a matter of vital importance and one which should receive the active support of all members of the British Medical Association. The provision of suitable vehicles with the necessary cupboards will involve considerable capital expenditure, which local authorities will often be reluctant to incur. Judging by the casualty figures in Barcelona, the allowance of dressings, drugs, and utensils for only 250 initial casualties per unit would appear to be hardly adequate. In the published list of equipment only two eye baths and one two-pint irrigator are allowed per mobile unit and also per fixed first-aid post.

I have tried to show why we may expect large numbers of eye casualties to occur suddenly, and I outlined the general medical arrangements by which it is proposed to deal with these casualties. I suggest that, to ensure uniformity of procedure and to maintain a high average standard in dealing with eye cases throughout the 200 or so local authorities in Britain, each of whom has its own scheme of casualty service, a system of consulting ophthalmic surgeons and ophthalmic centres should be organized on the lines adopted by the Army Medical Department in the great war. Under this system there was a Consulting Ophthalmic Surgeon to the Forces, who exercised a general supervision and direction over all ophthalmic work. Next there were Army and Command Consultants, who supervised work in limited areas. Finally in each army over-seas and at each command at home there were one or more ophthalmic centres attached to general and base hospitals in which eye casualties were collected and treated. I submit that only by some such centralized supervision and regulation in a period of air attacks on Britain can the best results be ensured for eye casualties among the civil population.

Conclusion

Let me here add a few words about a personal experience of a mustard gas attack and of the deductions to be drawn therefrom. On July 22, 1917, I was in command of a field ambulance stationed on the Belgian coast near La Panne. Within twenty-four hours I had to admit nearly 2,000 mustard gas casualties. The great majority of these were completely blind. Although roughly 80 per cent. were fit for duty again in a fortnight, all were hospital cases for the time being. It was essential to treat as many cases as possible simultaneously, and to expand my bed accommodation rapidly. As the result of my experience I would strongly urge upon all Association members interested in eye work that they should agitate for the provision in their respective areas of the following: (1) A supply of marquees sufficient to allow of existing hospital accommodation being rapidly increased. (2) A supply of auxiliary nursing personnel specially trained in eye irrigation. (3) A sufficient supply of irrigators to allow of a considerable number of mustard eye casualties being treated simultaneously.

Summary

This paper is an attempt to describe the conditions under which ophthalmologists will have to work on the home front in war time.

The number of eye casualties we would have to expect, based on the example of the civil war in Spain, is discussed.

The results of the use of the various kinds of aerial bomb, and particularly of mustard gas bombs and mustard gas spray, are reviewed.

A suggestion is made as to the general arrangements by which to deal with eye casualties.

Glucose Tolerance and Acid-base Equilibrium.—The literature relating to disturbances of carbohydrate metabolism found in patients suffering from some mental disorders and to disturbances of the acid-base equilibrium, also stated to be present in some psychotics, is reviewed. Experiments are reported which were designed to show the presence or absence of correlation between the two disturbances. Results of the investigation were negative, no such correlation being found. It is therefore concluded that changes in acid-base equilibrium are not responsible for the alterations in carbohydrate tolerance.—Disturbances of Glucose Tolerance and of Acid-base Equilibrium in Manic-depressive Insanity. J. K. Marshall. —*J. ment. Sci.*, March, 1939, 85, 222.

TRANSFUSION WITH STORED BLOOD

BY

J. C. LEEDHAM-GREEN, F.R.C.S.

Honorary Assistant Surgeon, North Staffordshire Royal Infirmary; late Resident Surgical Officer, General Hospital, Birmingham.

Although reports of the value of stored blood for transfusion purposes have been published recently by Biddle and Langley (1939), Elliott, Macfarlane, and Vaughan (1939), Vaughan (1939), and other writers, its widespread adoption has not yet followed. The advantages of a ready supply of stored blood are manifest and have been sufficiently emphasized by the authors I have named. From my own experience during the last twelve months I can echo their enthusiastic reports. There is, moreover, one advantage of stored over fresh blood to which, so far as I am aware, no reference has been made, and that is the diminished risk of transmitting syphilis. According to Neisser (1914) the *Treponema pallidum* loses its virulence after twenty hours in an ice-chest.

Collecting and Storing the Blood

Complicated and expensive apparatus is not needed for collecting or storing the blood. The one essential is that the blood should be withdrawn with every aseptic precaution into a *closed* bottle, and the purpose of this communication is to give my experience with sixty transfusions of stored blood at the General Hospital, Birmingham, using the method of collecting blood described by Marriott and Kekwick (1935). The donors were all members of the Birmingham Blood Transfusion Service, and were either Group II or Group IV (Moss). There is no need to enlarge on Marriott and Kekwick's method of bleeding donors, for they have described it fully. The blood is collected in a graduated quart milk bottle in which a negative pressure is maintained by means of a Dunlop foot-pump in which the valve has been reversed. If such a pump is not available a Potain's aspirator will serve the purpose. The average amount of blood collected from each donor was 600 c.cm., and this was mixed with 100 c.cm. of 3.8 per cent. sodium citrate solution.

After the blood had been collected the bottle was sealed with a plug of sterile cotton-wool round which a layer of gauze had been wrapped to prevent the wool from sticking to the neck of the bottle. A test tube with a few drops of the donor's blood in citrate solution for the cross-agglutination test between the donor's corpuscles and the recipient's serum was attached to the bottle with a rubber band. Finally the bottle was labelled with the date on which the blood had been taken and the group, and immediately conveyed to a refrigerator which maintained a temperature of about 4° C.

The Present Series

Fifty-three donors were bled and sixty transfusions given. In several cases two transfusions were given from blood collected from one donor. One bottle was discarded on account of excessive haemolysis. The average length of time the blood was kept before it was used was 5.5 days. The longest period was twenty-eight days, and no reaction followed the transfusion of this blood. The average length of time the blood had been kept in those cases showing reactions was four days. The blood was given by the gravity method, and in one case by means of Marriott and Kekwick's drip-transfusion apparatus.

Reactions

Reactions were observed in twelve cases, as follows: severe rigors, one case; slight rigor or shivering attack, eight cases; pyrexia, three cases. There were no instances of jaundice or haemoglobinuria. The reactions were equally divided among the patients of Group II and Group IV. In four of these cases it is not improbable that other factors besides the blood were responsible.

Case 1.—A patient with microcytic anaemia developed a slight rigor eleven hours after the transfusion.

Case 2.—A man who had been transfused after a perineo-abdominal excision of the rectum developed a rigor, but at the time of the rigor was actually on an intravenous glucose "drip."

Case 3.—A man with a bleeding peptic ulcer showed a rise in temperature to 101° twelve hours after transfusion.

Case 4.—A boy of 15 with leukaemia developed a temperature of 101.4° after transfusion.

In the last case the blood had been transfused a few hours after it had been taken. Blood from the same bottle was given three days later to another patient without any reaction developing. In the last two of these cases it is just as likely that the rise of temperature was a natural feature of the disease as that it was an effect of the transfusion. If these two be excluded from the twelve cases which showed a reaction we are left with ten, giving a reaction rate of 16.6 per cent. This rate is almost identical with that found by Vaughan (1939) in fifty consecutive transfusions with stored blood at the British Postgraduate Medical School. Although I have no figures for comparison I have an impression that this reaction rate is no higher than after the transfusion of fresh blood, and the various ward sisters are of the same opinion.

Haemolysis which is apparent to the naked eye usually starts after the blood has been stored from ten to fourteen days, but may appear much earlier if there has been difficulty in securing a rapid even flow from the donor, if clot is present, or if the blood has been taken out of the refrigerator and allowed to get warm in anticipation of a transfusion and then returned to the refrigerator. Blood in which the supernatant plasma has turned red should be discarded, and, as stated, one bottle was discarded for this reason; but a slight degree of haemolysis does not appear to give rise to any unpleasant sequelae. Routine bacteriological tests were not carried out, but occasional samples were cultured and were always found free from microbic contamination.

It is my pleasure to express thanks to the medical and surgical staffs of the General Hospital, Birmingham, for free access to their cases, and to Dr. W. T. Hillier for the bacteriological examinations and much friendly advice. I owe a special debt of gratitude to numerous donors and to Mr. H. E. Cooper, the honorary secretary of the Birmingham Transfusion Service. His friendly co-operation made this work possible.

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CHOICE AND PREPARATION OF BLOOD-GROUPING SERA FOR EMERGENCY PURPOSES

BY

S. W. CHALLINOR, Ph.D., B.Sc., A.I.C.

J. C. J. IVES, M.B., Ch.B.

AND

C. E. van ROOYEN, M.D.

(From the Department of Bacteriology, University of Edinburgh)

During the past few weeks we have been confronted with the problem of supplying relatively large quantities of human typing sera at a few hours' notice, and the purpose of this paper is to record the methods we employed, in the hope that they may be of help to others faced with the same situation.

The selection of the typed volunteers constituted our first problem, and this was accomplished with the aid of a small quantity of blood-grouping sera* of Group II (Moss)—that is, international classification A; and Group III (Moss)—that is, international classification B. With these a number of human volunteers were duly typed. (For the remainder of this paper we have adopted the Moss classification.) From these individuals four of Group II and four of Group III were chosen for tests, the object of the experiments being to find out which of them could provide the most active sera for standard typing purposes. In order to obtain this information it was decided to set up a series of increasing dilutions of each individual's serum, to which was added a suspension of red blood cells. In this way it was possible, first, to determine which of the sera produced clumping in the highest dilution, and, secondly, to ascertain the character and nature of the clumping produced. The results of our experiments showed that the serum possessing the highest end-titre of agglutinins was not necessarily the serum of choice for typing purposes, since we observed that the qualitative character of the reaction—for example, the size and appearance of the clumps as seen by the naked eye—was a better criterion of the value of sera for typing work than the end-titre at which the reaction occurred. We wish to point out that some sera give agglutination reactions that are easily visible to the naked eye, whereas with others such reactions are not so marked and the time taken for agglutination is longer. It is desirable to add a preservative to typing serum, and of the two most suitable reagents, phenol and glycerol, we decided to use phenol in order to avoid excessive dilution of the serum. For a comprehensive account of human blood groups the reader is referred to the monograph of Dawood Matta (1937). Details of the experimental methods employed by us are as follows.

Collection of Blood

Ten c.cm. of blood was removed from each of four Group II donors, was allowed to clot overnight in the ice-chest, and was separated from the sides of the test tube with a platinum wire and centrifuged; the serum was then separated. From one of this same group a further 10 c.cm. of blood was withdrawn, added to 10 c.cm. of 3.2 per cent. sodium citrate solution, centrifuged, the deposited corpuscles washed thrice in physiological saline, and 100 c.cm. of a 1 per cent. suspension in saline of these cells prepared. There was now available (1) about 3 c.cm. of serum from four different Group II donors, and (2) 100 c.cm. of a 1 per cent. saline suspension of washed Group II corpuscles. Exactly the same procedure was adopted with regard to the four Group III donors, so that four specimens of Group III serum—that is, containing agglutinin α—were available, together with one specimen of Group III corpuscles—that is, containing agglutinogen B.

Technique of Titration Test

For the testing of each serum eleven Wassermann tubes were placed in a rack and 0.4 c.cm. of saline was added to tubes Nos. 2 to 11 inclusive. To the first and second tubes 0.4 c.cm. of serum (from the first donor to be tested) was added. From tube No. 2, 0.4 c.cm. of the diluted serum was transferred to tube No. 3, and from this tube the process was repeated until tube No. 10 was reached, from which 0.4 c.cm. was discarded. The serum dilutions of No. 1 donor were thus as follows: 0.4 c.cm. of undiluted serum in the first tube, 0.4 c.cm. of 1:2 serum in tube No. 2, 1:4 in No. 3, and so on with the highest dilution of 1:512 in tube No. 10. Tube No. 11 contained only 0.4 c.cm. of saline and constituted the control. Red blood corpuscles of Group III were next added (0.4 c.cm. of a 1 per cent. suspension in saline to each tube), so that each dilution of serum became doubled, and thus tube No. 1 contained a final dilution of serum diluted 1:2, and tube No. 10 a dilution of 1:1024. The control tube now consisted of a mixture of normal saline and red blood cells. The test tubes were then incubated at 37° C. for one hour; at the end of that time a preliminary examination of the tubes was made with the aid of a hand lens, following which the tubes were allowed to stand overnight on the

Final Serum Dilution (against Group III Corpuscles)

	1	2	3	4	5	6	7	8	9	10	11
Group II Serum	1 : 2	1 : 4	1 : 8	1 : 16	1 : 32	1 : 64	1 : 128	1 : 256	1 : 512	1 : 1024	Control
Donor 1	+++	+++	+++	+++	+++	++	−	−	−	−	−
„ 2	+++	+++	+++	++	+	−	−	−	−	−	−
„ 3	++++	+++	+++	+++	+++	++	+	−	−	−	−
„ 4	+++	+++	+++	+++	+++	++	+	±	−	−	−

Final Serum Dilution (against Group II Corpuscles)

	1	2	3	4	5	6	7	8	9	10	11
Group III Serum	1 : 2	1 : 4	1 : 8	1 : 16	1 : 32	1 : 64	1 : 128	1 : 256	1 : 512	1 : 1024	Control
Donor 5	+++	+++	+++	+++	++	+	+	±	±	−	−
„ 6	++++	+++	+++	+++	++	+	+	±	−	−	−
„ 7	+++	+++	+++	+++	+++	++	+	±	−	−	−
„ 8	+++	++	++	++	++	++	++	+	±	−	−

Note.—The sign + indicates agglutination.

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* Burroughs Wellcome and Co., London.

laboratory bench at room temperature, being subjected to a final reading in the morning (after eighteen hours).

This method of testing serum (No. 1) for haemagglutinating properties was repeated in the case of the other three sera (of Group II). In actual practice it was our procedure to set up all the serum dilutions simultaneously, add corpuscles of Group III to the four Group II sera and corpuscles of Group II to the four Group III sera, incubate the test tubes together, and interpret all the results, first at the completion of one hour and later at the end of eighteen hours. The table indicates the results obtained.

From the foregoing table the following definite fact can be observed—namely, that each of the diluted sera tested gave approximately the same end-agglutination titre (approximately 1:128 for serum of Group III Moss). We wish to point out that human sera possess different agglutinin end-titres, but in the present work the ones used happened to have approximately equal end-titres; also, in each group variations are found in the degree of agglutination given by different corpuscles with the same serum. It was seen, too, that each of the four sera showed a dilution at which optimum agglutination occurred. As already stated, in addition to these quantitative observations there were definite qualitative differences in the nature and size of the clumping which enabled us to select certain of these sera as being the most suitable for the purpose of blood grouping.

Storage of Serum

Having chosen the two most suitable donors from each of Groups II and III, half to three-quarters of a pint of blood was withdrawn from each donor into sterile pint bottles and allowed to stand overnight in the ice-chest. During this preliminary storage the absorption of any "cold" agglutinins takes place. The separated serum was transferred by means of sterile pipettes into sterile 100 c.cm. bottles. In order to maintain sterility phenol (5 per cent. aqueous solution) was then added to the serum so that the phenol concentration was 0.5 per cent. For distribution purposes the phenolized serum was transferred in 1 c.cm. quantities to sterile phials fitted with rubber bungs, which were afterwards waxed.

Use of Desiccated Serum

An alternative method for the preservation of typing sera which we used was that employed earlier by Craigie (1931) and Craigie and Tulloch (1931) for the preservation of sera by exsiccation *in vacuo* from the frozen state. Using this method, it is possible to dry rapidly in a desiccator over $CaCl_2$ large quantities of serum. The final product, which assumes the character of a dry brown flaky powder, can be stored in the ice-chest for an indefinite length of time without fear of contamination or significant loss of agglutinating properties. On account of its hygroscopic nature the container should be sealed or well stoppered. The only disadvantage of the use of dried serum is that larger quantities are required than of the fluid serum; but this disadvantage is offset by the fact that desiccated serum is easily distributed and handled, and, in any case, the actual amount of dried serum needed for a typing test is exceedingly small.

When it is desired to make a quantity of serum from dried material it is necessary to reconstitute the dried serum to the original bulk by the addition of sterile distilled water; thus if 5 c.cm. of serum were desiccated to a dry powder, 5 c.cm. of water should be added to it in order to restore its original consistency.

Technique of Typing Test

For typing human serum we have employed the standard macroscopic procedure of the London Blood Transfusion Service. Briefly, this was performed by placing two large drops of typing sera of Groups II and III respectively on a glass plate, to each of which was added *one small* drop of blood obtained from a finger-prick, care being taken to see that only enough blood was added to colour the mixture light pink, but not deep red. After thoroughly mixing the blood and serum by agitating the plate, the results were usually evident in one to two minutes. The use of a hand lens was occasionally of assistance in interpreting the phenomena, but, in general, neither a hand lens nor a microscope was required.

Technique of Test employing Dried Serum

A few small flakes (one bacteriological loopful) of dried serum of each of Groups II and III were placed on a glass plate; a large drop of water was added to each and the serum allowed to dissolve by gentle mixing. The subsequent stages of the test were performed in the same manner as in the case of fluid serum.

Conclusions and Summary

From our observations we conclude that the selection of suitable blood intended for the purpose of providing standard human blood-grouping sera should be assessed in two ways: (1) according to the end-titre of agglutinins; (2) by considering also the character and size of the clumps produced after a given length of time.

The use of desiccated typing sera is described and its merits for war-time work emphasized.

We wish to record our thanks to the Edinburgh Blood Transfusion Emergency Service for help in withdrawing the blood from the donors selected by us, and to Professor C. H. Browning for his interest and valuable advice.

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A quarterly court of the directors of the Society for Relief of Widows and Orphans of Medical Men was held on October 11, with Mr. V. Warren Low, president, in the chair. The deaths of a member and two of the widows in receipt of grants were reported. One of the widows had been in receipt of grants for the past thirty-four years and had received £3,500 from the society. Her husband, who was elected a member in 1868, had paid £52 10s. in subscriptions. The audited accounts for the half-year ended June 30 were presented and passed. During that period £2,242 10s. had been distributed among the sixty-two widows and four orphans on the books of the society. A widow of a member applied for relief, and was granted £60 yearly. The grants in January, 1940, will total £2,152. Owing to the increase in income tax the directors will not be able to make a Christmas present this year although the amount of income tax is returned, as the reclaim is not paid until about the middle of April in each year. Membership of the society is open to any registered medical man who at the time of his election is resident within a twenty-mile radius of Charing Cross. Relief is granted only to widows and orphans of deceased members, and they must be in necessitous circumstances. Full particulars may be obtained from the secretary of the society, 11, Chandos Street, Cavendish Square, W.1.

SEVERE UTERINE INERTIA TREATED BY CUTTING THE CERVIX

BY

J. V. O'SULLIVAN, M.D., F.R.C.S., M.R.C.P.

Assistant Obstetric Surgeon, City of London Maternity Hospital and Queen Mary's Hospital, Stratford; Consulting Obstetrician and Gynaecologist, Kingston and District Hospital; Obstetric Surgeon, Bearsted Memorial Hospital

Severe uterine inertia is one of the most difficult problems of midwifery. I think inertia should be divided into primary and secondary types; primary where no cause for the inertia can be found, and secondary where a definite cause—for example, disproportion or rigid cervix—is present. Most doctors are acquainted with the course of a severe case of inertia. The labour often starts with early rupture of the membranes. Uterine contractions remain weak and irregular for two or three days, during which time the liquor drains away. The cervix is slowly taken up, but does not dilate to more than two to three fingers. The head is by now deeply engaged in the cavity, and the cervix, which looks normal and caps the head, can often be seen by parting the labia and looking into the vagina. The uterus still relaxes well between pains, and the mother and foetus are still fit; but about this stage the patient has a tendency to bear down with pains. From now on she often complains of pain in the sacral region and sometimes behind the pubis, due probably to pulling on the utero-sacral and pubo-cervical ligaments as the cervix descends in front of the head. The patient, in short, seems to be trying to pass her uterus. Next a caput begins to form through the os, and soon meconium appears. During the following twenty-four hours or so the uterus relaxes less well and becomes tender to palpation; the foetal distress increases, while maternal distress, as seen by vomiting, rising pulse rate, and temperature, appears. The liquor becomes foul-smelling, and about this time the foetus usually dies *in utero*. The soft macerated head gradually bulges through the undilated cervix, forcing it open, and eventually by help of the obstetrician a macerated foetus is delivered. Perforation is usually necessary, and great difficulty is experienced in crowning the head and delivering the body because of the active retention of the foetus by the uterus (Holland). A morbid puerperium, with sloughing of the perineum, is the rule.

I was led to try the effect of cutting the cervix laterally for these unhappy patients by observing cases in which the cervix was buttonholed through either the anterior or posterior lip, and particularly two cases in which the cervix completely sloughed off and came away on the foetal head during the delay in labour. The site of the incision was largely determined by the fact that in many normal deliveries the cervix, as is well known, tears laterally. I first treated severe inertia cases, which had resisted medical treatment, by slow continuous or repeated manual dilatation of the cervix, by weight traction through Willett's scalp forceps, or, if the foetus was dead, by perforation followed by weight traction. I have also cut the cervix in front and behind, and immediately delivered the foetus by forceps if alive, and by perforation if dead, and then sutured the cervix. I was not satisfied with any of these procedures, so ultimately adopted the method which I propose to describe in this article.

Technique

The operation is simple, and can be done in a few minutes under any light anaesthesia, or even with Minnitt's gas-and-air analgesia machine. Two fingers are inserted into the cervix, one outside and one inside, to guard the side wall of the vagina and the foetal head respectively, and the cervix snipped with blunt-pointed scissors, usually at the lateral angles (roughly corresponding in position to 9 and 3 of the clock dial), which are already thinner than the rest of the cervix and often beginning to tear spontaneously. If the operator wishes a Sims duck-bill speculum can be passed and the cutting done under direct vision. The incision should not extend more than half an inch from the edge of the cervix, and should be preceded and followed by a hot antiseptic douche. Two incisions only should be made, one at each side. The cervix, after cutting, should be pushed gently up over the front of the head. The opportunity should be taken of stretching the vagina and ironing out the perineum. The patient is now allowed to come out of the anaesthetic.

Before this operation is attempted the usual methods of treating such cases should have been tried—for example, sedatives, hormone therapy (Jeffcoate), and a full medical induction. The head should be deeply engaged, the cervix taken up, thin, and capping the foetal head, and the membranes ruptured. If these points are observed the loss of blood is negligible—only a few drachms. The cervix should not be cut if it is oedematous or thick. I do not suture the cervix after delivery because with the small incision it is not needed and further tearing is slight. Patients in whom contractions are regular but half-hourly and advance is very slow, and in whom low sacral ache and retropubic pains develop, are immediately relieved of these pains, and labour ends rapidly and spontaneously. Where contractions are very irregular and weak labour is slower in ending, and sometimes a low forceps operation is necessary in the second stage.

There is another point I should like to stress particularly, and that is that morphine should never be given as routine to these patients; potassium bromide and chloral, 40 grains of each orally or rectally, or paraldehyde, 8 drachms rectally, act excellently. These drugs should be given alternately, preferably at night. The patient should also be encouraged to sit up as much as possible by day and should be given plenty of fluids and carbohydrates. When vomiting is troublesome a rectal or intravenous glucose saline should be administered.

Results

Patients needing this operation are rare, so I have been able to collect only fourteen cases in three years, one in private and twelve in hospital practice, out of about 9,000 to 10,000 deliveries which came under my supervision. It will be seen, however, from the analysis that in suitable cases the operation is highly successful. The cervices, when examined either during the puerperium or at post-natal visits, showed a transverse laceration, no worse in five cases than the cervix after many normal labours. In the others the transverse slit was well marked, but in no case did it involve the whole portio vaginalis. One of these women has had two normal labours and one miscarriage at four months since the operation.

I have included in this series one case in which marked foetal distress, as shown by meconium in large quantities and a foetal heart rate of 90 to 100 between pains, developed when the os was three fingers dilated. The pains were strong and regular. I cut the cervix as described, stretched the vagina, and ironed out the perineum under light anaesthesia. The baby was born, alive and well, one hour later.

Case 1.—Emergency. Aged 18; primipara. No disproportion. No toxaemia. Spontaneous onset; membranes ruptured seven hours after. Pains weak but regular. Sedatives given. Os still only three fingers after sixty-one hours. Cervix cut as described. 7½-lb. baby born spontaneously 2 hours 20 minutes later. Excellent result. Mother and baby satisfactory. Cervix healed.

Case 2.—Booked case. Aged 24; primipara. Full term. No disproportion. No toxaemia. Spontaneous onset; membranes ? ruptured on admission. Pains regular. Much pain in lower sacrum. Sedatives given. After seventy-one hours os three fingers only; cervix taken up; liquor scanty. Cervix cut. 7¼-lb. baby born spontaneously three hours later. Excellent result. Mother and baby satisfactory.

Case 3.—Booked case. Aged 31; primipara. Full term. No disproportion. Mild toxaemia. Medical induction, as no pain and membranes ruptured. Pains irregular and weak. After fifty-two hours os three fingers only; liquor became scanty, green, and offensive. Sedatives and stilboestrol tablets given with no effect. Cervix incised under gas and air. Baby born spontaneously, in blue asphyxia, fifteen hours later. Good result. Cervix healed at end of puerperium. Mother and baby did well.

Case 4.—Booked. Aged 30; primipara. Full term. No disproportion. Oedema of legs only. Spontaneous onset, membranes ruptured before labour started. Pains week. early maternal distress. Sedatives and medical induction given. After forty-eight hours os still only two fingers. Cervix cut. Baby born twenty-two hours later; head lifted over perineum after two hours in second stage. Baby 8½ lb. Good result. Mother and baby satisfactory.

Case 5.—Emergency. Aged 21; primipara. Full term. No disproportion. No toxaemia. Spontaneous onset, membranes ruptured after sixty hours. Pains regular. Sedatives, stilboestrol, prontosil, glucose, etc., given. After 130 hours os still three fingers; much meconium. Cervix incised under gas and air. 10¼-lb. baby born seven hours later. Delivered by forceps because of maternal and foetal distress. Very good case. At post-natal examination condition satisfactory; cervix showed slits no worse than many normal labours.

Case 6.—Booked, private. Aged 21; primipara. Full term. No disproportion. No toxaemia. Spontaneous onset; membranes ruptured twenty-four hours later. Pains regular; much pain in lower sacrum. Sedatives given. After seventy-two hours os still three fingers; much meconium. Cervix incised under gas and air. 7¾-lb. baby born spontaneously three hours later. Cervix stitched at end of third stage. Excellent result. Two normal labours and one miscarriage since—no inertia.

Case 7.—Booked. Aged 31; primipara. Full term. No disproportion. No toxaemia. Medical induction. Pains regular but weak. Severe pain in lower back. After forty-five hours os still two fingers. Cervix cut under chloroform. Baby, 8 lb. 2 oz., born eleven hours later. Easy low forceps delivery. Later manual removal of placenta because of P.P.H. Good result. Both satisfactory.

Case 8.—Aged 25; primipara. Full term. No disproportion. No toxaemia. Spontaneous onset; membranes ruptured. Contractions poor to fairly strong. Much pain in lower sacrum and pubis. Maternal distress after thirty-six hours. After fifty-one hours os still three fingers. Cervix cut under light chloroform. Baby, 8 lb. 6 oz., born five hours later, spontaneously. Excellent result.

Case 9.—Booked. Aged 27; primipara. Full term. No disproportion. No toxaemia. Spontaneous onset. Pains irregular at first, and weak. Membranes ruptured on admission. Much pain in lower back. Sedatives and oestradiol given; no effect. After seven days os still only three fingers; maternal and foetal distress present. Cervix cut under gas and ether. Baby, 8 lb. 14 oz., born spontaneously eight and three-quarter hours later. Excellent result. Mother and baby satisfactory.

Case 10.—Emergency. Aged 29; primipara. Full term. No disproportion. No toxaemia. Spontaneous onset seventy-two hours before admission. Membranes ruptured by doctor. Foetal heart not heard. Contractions irregular and weak. Much pain in sacrum and pubis. After eighty-nine hours os still three fingers; maternal distress; meconium and little liquor. Cervix cut under whiff of A.C.E., and baby, stillborn and weighing 6 lb. 8 oz., delivered by forceps three and a half hours later. Good result. Mother's condition satisfactory at post-natal visit.

Case 11.—Emergency. Aged 23; one miscarriage. Full term. No disproportion. No toxaemia. Spontaneous onset; quinine after three days. Foetal movements stopped after six days; patient admitted. Pains moderated. Morphine given twice by outside doctor. On admission given glucose, anti-gas-gangrene serum, etc. After seven days os three fingers; maternal distress, offensive discharge of meconium and liquor; foetus dead. Cervix cut under gas and air, and stillborn baby, 8 lb., born spontaneously seven and a half hours later. Excellent result.

Case 12.—Booked. Aged 25; primipara. Full term. No disproportion. No toxaemia. Spontaneous onset. Pains slight; membranes ruptured early. Given sedatives and oestroform, with no effect. After 151 hours os two to three fingers only. Cervix cut. Baby born spontaneously twenty-three and a half hours later, weight 7 lb. 12 oz. Good result. Baby satisfactory. Mother—no milk, only serum in breasts.

Case 13.—Booked. Aged 24; primipara. Full term. First degree disproportion. No toxaemia. Spontaneous onset. Pains weak at first. Membranes ruptured four days after onset. Severe backache. On fourth day maternal distress marked; liquor became yellow and offensive. After 123½ hours mother's temperature 102°, pulse 120. Foetal heart not heard. Os two to three fingers dilated. Cervix cut. Os full six hours later and stillborn baby delivered by low forceps. Very good result as regards the operation. Mother developed septicaemia and peritonitis, and died twelve days after delivery. P.M.: no injury to uterus; general peritonitis present.

Case 14.—Booked. Aged 31; primipara. Twins. Aortic and mitral disease; toxaemia of pregnancy. At thirty-eighth week membranes ruptured spontaneously. Pains weak about one in ten. Patient was treated with sedatives, oestroform, etc. Os only two to three fingers dilated at end of ninety-eight hours. Maternal distress now well marked. Cervix cut at lateral angles without anaesthetic and without upsetting patient. Cervix immediately retracted. Six hours later os fully dilated. Easy forceps deliveries. Mother and babies did well. Post-natal examination showed a normal pelvis and multiparous cervix.

The following is not a case of inertia, but is interesting from the point of view of the marked shortening of labour after cutting of the cervix, with stretching of the vagina and ironing out of the perineum:

Booked case. Aged 20; primipara. Full term. No disproportion. Slight toxaemia. Admitted in labour. After sixteen hours os three fingers; pains strong and regular; scarcely any liquor left; marked foetal distress, foetal heart 80–90 between pains; much meconium. Os incised under gas and air, and baby born spontaneously one hour later. Mother and baby satisfactory.

Synopsis of Cases

All the patients were primigravidae, between the ages of 18 and 31. All the mothers made an uninterrupted recovery except one in whom the intranatal pyrexia continued into the puerperium, causing peritonitis and death. Four of the cases were emergencies, the rest booked. Nine babies were born spontaneously, alive and well. Four of the babies were stillborn, three macerated: two of these were emergency cases; in one, foetal distress was well marked on admission, while in the other the foetal heart could not be heard. Seven babies (one set of twins) were delivered by low forceps. Time in the first stage before operation: 45, 48, 51, 52, 61, 71, 72, 89, 98, 123½, 130, 151 hours, 7 days, 7 days. Average hours in labour before operation, 94. In no case was the os more than three fingers dilated. Average interval between operation and termination of labour, nine hours. Three patients were actually delivered spontaneously in three hours or less.

Conclusion

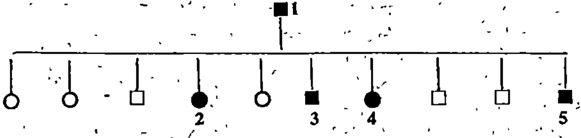
A simple method of expediting cases of severe uterine inertia has been described, and though the number is small, I feel confident that if cases are selected as described the treatment is simple and very successful.

Clinical Memoranda

Familial Ptosis with Ophthalmoplegia Externa starting in Adult Life

Ptosis occurring congenitally in members of the same family is fairly common, and occasionally this is combined with external ophthalmoplegia (Panas, 1896; Cooper, 1910). Frequently, also, a condition of congenital ptosis, ophthalmoplegia, and epicanthus has been described, and the condition has been recorded in detail in four generations by C. H. Usher (1925–6). Ptosis starting in adult life associated with external ophthalmoplegia of a slowly progressive type is comparatively rare. Beaumont (1900) reports twelve cases in three generations. In these cases the disease always had its onset in adult life.

In the family, to be described five cases occurred in two generations—the father and four children, two male and two female. In Case 4 the signs were present as a child; in the others not until about 30 years of age. Apart from one affected male who died from generalized tuberculosis aged 45, the family of the affected father were otherwise healthy, and eight of the ten children are still alive. Internal ophthalmoplegia was not noticed in any of the patients examined, and there was no history of goitre.



Case 1.—The father, who was an only child, died at 49, at which time he had severe ptosis of both upper lids, but especially of the left. He had to hold up his lids to see properly. I have seen a photograph taken some years before his death showing the ptosis.

Case 2.—Mrs. A., aged 65, has two daughters, aged 35 and 32, not affected so far. She has bilateral ptosis, which came on approximately at 30 to 35 years of age, and wears props attached to her spectacles to keep her eyes open. Her upper lids cover three-quarters of the pupillary area in the right and almost the total pupillary area in the left (4 mm. pupils). She has no diplopia, but there is limitation of the ocular movements, with only very slight movements of the eyes upwards, marked limitation laterally, and some diminution of downward movement.

Case 3.—Mr. B., died aged 45, had left-sided ptosis at the time of his death.

Case 4.—Mrs. C., aged 59, states that her lids have been drooped since a child, and blames an attack of measles for the onset of the trouble. Her left lid covered approximately five-sixths of the pupillary area, and the right covered the upper third. The pupils were approximately 3 mm., and no evidence of external ophthalmoplegia was found. She has defective upward movement and some lateral diminution of the movement, apparently more marked, of the left eye to the left side. There is no diplopia. She has no family.

Case 5.—Mr. D., aged 53, has had trouble since before 30 years of age. The lids cover half of the right and two-thirds of the left pupillary area (pupils approximately 5 mm.). He complains bitterly of diplopia, and to avoid this keeps the left eye closed. The diplopia is chiefly due to left hypotropia. There is no upward movement of the left eye, and diminution of lateral movements of the eyes. I have suggested trying prisms or even a tarsorrhaphy on the left side, but he prefers to continue as before. The patient's family have, I understand, no signs of similar trouble, but I believe the eldest is still under 30 years of age.

Manchester. S. H. FAULKNER, M.D.

References

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Traumatic Pancreatitis in a Child

The memorandum by Mr. Armstrong in the *Journal* of June 17 (p. 1230) prompts me to record the following case.

Case History

A boy aged 7 went home crying and told his mother of a kick in his stomach. It was not till after three days that severe abdominal pain set in. As a brother had died of acute appendicitis the parent summoned the doctor, who noted the spasmodic nature of the pain but at first found no tenderness. Later in the day he suspected peritonitis and sent the patient to hospital. The aspect of the child accorded well with acute appendicitis, and the right iliac fossa was very tender. However, on further examination the tenderness was found diffuse. It was in the hypogastrium, well marked in both loins and across the epigastrium; this led to misgivings about the diagnosis, and these deepened when heavy glycosuria and slight acetonuria were discovered. Traumatic pancreatitis suggested itself, but was dismissed because of the lucid interval since the alleged accident. Evidently peritonitis existed though the cause thereof was obscure.

On July 13, 1938, under spinal anaesthesia, a thickening was felt beneath the right rectus about the level of the transverse colon. Through a right paramedian incision bile-stained fluid ran forth, also some coagulated lymph. On depressing the transverse colon watery swelling and fat necrosis were noted in the gastro-colic omentum, which I opened to drain the damaged pancreas. A suprapubic drain was next inserted, and, finally, a retroperitoneal stab drain was used in the right iliac fossa to evacuate a bag of watery exudate behind the posterior iliac peritoneum. The patient recovered rapidly, and when seen two months later he was very well.

The interesting features in the case are: (1) The age of patient (7 years). (2) The latent period of three days before peritonitis; this was also noted in Armstrong's case. (3) Gravitation of retroperitoneal exudate from the pancreas into the right iliac fossa, which drew attention away from the underlying lesion.

Bristol. A. WILFRID ADAMS, M.S., F.R.C.S.

Catatonia.—This condition, persisting for twelve days, is described in a cannabis indica addict. During this period the patient was terrified by the mention of police or prison. The origin of this condition in cannabis indica addicts is discussed. The author considers that it is produced by cortical inhibitions produced by the drug, leading to the liberation of automatic subcortical mechanisms.—Catatonic Syndrome in Acute Psychosis due to Cannabis Indica. P. Scouras.—*Encéphale*, February, 1939, **34**, 78.

Reviews

EXPERIMENTAL MEDICINE

The Harvey Lectures, 1938–39. Delivered under the auspices of the Harvey Society of New York. Series 34. (Pp. 279; 16 illustrations. 18s.) London: Baillière, Tindall, and Cox. Baltimore: Williams and Wilkins Company. 1939.

We always look to the annual Harvey Lectures for enlightenment on some of the more obscure aspects of experimental medicine, and not in vain, although as time goes on they inevitably become more specialized in their interest.

Professor G. F. Marrian leads off with a discussion of the metabolism of those hormones which may be conveniently termed "steroids," since they all contain a particular phenanthrene ring; the group includes the natural occurring androgens, oestrogens, progesterone, and adrenal cortical hormone, in addition to many others synthetically prepared. Much work has been done on their biochemical history in the body, and, as the author remarks, speculation on their possible modes of origin and conversion is becoming the fashionable biochemical pastime. Dr. A. A. Weech deals with the behaviour of the albumin fraction of serum and its response to dietary changes in the hope of throwing light on the rational treatment of patients depleted of this constituent of the blood. Professor E. J. Cohn discusses at length the chemistry of proteins, with special reference to their ionic nature. Professor E. F. du Bois, after a full investigation of the factors controlling the loss of heat from the human body, pathetically expresses his doubt that any of this work will have the slightest influence on clothing, since here custom and fashion reign supreme. Dr. E. A. Park's detailed consideration of the pathology of rickets is full of interest. He does not believe that withdrawal of lime salts from the organic matrix occurs in rickets. Decalcification of bone is a misleading phrase, for the calcium salts are not simply dissolved out. Nature's method of obtaining the calcium is to break down the organic matrix at the same time as the mineral content is released. Osteoid—that is, bone free from lime salts—is a stage in normal growth, mineral deposit coming later. The presence of osteoid in excess is a cardinal sign of rickets, the well-known defective absorption of calcium from the bowel preventing its deposit. The characteristic irregularity of formation of osteoid in rickets follows exactly the lines which might be expected in view of the fact that pressure stimulates new formation of bone and tension exerts no influence at all, unless an actually destructive one.

Dr. Linderstrom-Lang's lecture on enzymes in tissues and cells is for the biochemical elect, but Professor Szent-Györgyi's contribution on biological oxidation and vitamins, though abstruse, contains some interesting generalizations with a clinical bearing. Although the radiant energy of the sun is the ultimate source of all life-sustaining energy it cannot as such directly support life; otherwise life would fail at night. It is known that chlorophyll is the intermediary, but it is only of recent years that any clear conception has been gained of the way it acts beyond the fact that it returns oxygen to the atmosphere. This is a necessary consequence of the splitting of the elements of water and the fixing of its hydrogen to a carbon chain. There is really only one fuel, and that is hydrogen. All our food is essentially but a fixed form of hydrogen, and all the energy which supports life is derived from its oxidation with the formation of water. The splitting is accomplished by Keilin's cytochromes (one at least of which contains iron) and Warburg's enzyme. This iron atom is alternately oxidized and reduced. Ferrous iron contains one more electron than the ferric, and it is the handing over of this electron which is the activator of a series of changes too complicated to describe here; we are shown, however, that it throws light on the pigmentation of Addison's disease.

Man cannot live without his adrenals; but why does he turn brown before dying? Many fruits such as pears and bananas also turn brown when dying, while lemons do not. The brown pigmentation is due to the oxidation by an enzyme of catechol derivatives, while in those plants that do not turn brown the process is inhibited by a strongly reducing substance containing two very labile hydrogen atoms; this is ascorbic acid, which Szent-Györgyi found so abundantly present in Hungarian red pepper. Presumably the reducing substance normally present in the adrenal cortex is similar, and thus we remain unpigmented. Catechol and ascorbic acid both contain a dienol group on which the transferred electron exerts its effect. In the absence of ascorbic acid the oxidation of catechol to a pigmented derivative is not inhibited and the patient turns brown.

Professor Danforth's fascinating lecture on genes and hormones contains so much of fundamental biological interest that it has been made the subject of a leading article elsewhere in this issue.

SENSATION AND THE PSYCHE

Psyche and the Physiologists and Other Essays on Sensation. By Edward Guy Dru Drury, M.D., B.S., D.P.H. (Pp. 98. 5s. net.) London: H. K. Lewis and Co.

Dr. E. G. Dru Drury's occasional addresses are sought and welcomed in South Africa, and they are known and highly appreciated by many medical practitioners and others in this country. He has recently collected six such addresses which he has delivered of late years and published them in a small volume. They will, in reading, give pleasure and profit to a wider circle than those who originally heard them, though the author's delivery must have added greatly to the enjoyment of his varied audiences, for they afford abundant evidence not only of an original mind but of a striking personality and a power of vivid verbal expression. They are no doubt most easily assimilable by select audiences of what may be called a university type, but not merely by members of the medical profession or faculty. Two of them—that which gives its title to the collection and that headed "What do we Think With?"—were given at the Rhodes University College, the former to its Scientific Society and the latter to its Philosophical Circle. Two of them, "Labels and Luggage," and "Visceral Disharmony," were given to medical audiences at meetings in connexion with the Medical Association of South Africa (B.M.A.); one, "On Boredom," was delivered to teachers; and one, "On Growing a New Claw," to a branch of the Trained Nurses' Association. All alike require a certain alertness of mind for their full appreciation; but, with this, readers even more than hearers will be able to enjoy Dr. Dru Drury's subtleties of thought and expression and the originality and novelty of his point of view. This originality and novelty constitutes the main value of his collected essays. It is combined with a facility of apt quotation from a very wide selection of the writing of others, and with an illustrative suggestiveness of metaphor which is usually equally happy.

The author's theme, which holds a certain unity throughout, is, as indicated by his titles, the connexion and relation between physiological sensation and psychological reaction; and, in addition to the enjoyment of the characteristic thought and expression to which attention has been drawn, any reader, be he medical or lay, should be able to derive some very practical and valuable lessons. The astonishing and rather gruesome account of "growing a new claw" in particular will not only provoke a real retrospective sympathy for the author in every reader, but demonstrates very vividly how the sufferings of a medical practitioner in his own bodily illness may lead to a profitable enlargement of understanding both in the physiological and in the psychological field.

CASE-TAKING AND PHYSICAL DIAGNOSIS

Workbook in Elementary Diagnosis for Teaching Clinical History Recording and Physical Diagnosis. By Logan Clendening. (Pp. 167; illustrated. 7s. 6d. net.) London: Henry Kimpton. 1938.

Dr. Logan Clendening, professor of clinical medicine in the University of Kansas, brought out in 1934 *The Laboratory Notebook Method in Teaching Physical Diagnosis and Clinical History Recording,* and, as the clinic is simply a laboratory of a slightly different kind, this new book is described as a somewhat expanded rearrangement of that notebook. The author is evidently a keen and experienced teacher and has here provided a clear and elementary guide for medical students at their entrance on clinical work. But it is so graphically illustrated by a picture gallery of methods of physical examination—for example, the deep grip palpation, fist palpation, and hammer percussion of Murphy, and testing for protopathic sensation—and also representations of the facies and gaits in disease, that there may well be an appeal to those whose undergraduate days are long past. Further, the sometimes dry bones of physical signs are made interesting by brief verbal reproductions of their original accounts, thus recalling *The Classical Descriptions of Disease* by his colleague Professor R. H. Major, to whom and others gracious acknowledgments are made. A postscript contains some aphoristic reliefs such as, "Physical diagnosis is an art; and the mastery of an art has no end. You can always be a better physical diagnostician, just as Paderewski could always become a better pianist or Leonardo a greater painter. . . . Even a reading of *Hamlet* will improve your percussion. . . . A brilliant but erratic physician was asked to examine a patient; he paused a yard from the bed's foot and said, 'What do you want to know about this woman?' 'I want a diagnosis,' said the intern, 'She has a tuberculous cavity in her left apex,' was the answer, as he passed on. His only explanation was that she always had a full sputum cup, and was always lying on her left side." No doubt such snapshot diagnoses are dangerous, but they illustrated some important principles of physical diagnosis, such as alertness of perception and logical deduction.

TUBERCULOSIS IN PRIMITIVE PEOPLES

Primitive Tuberculosis. By S. Lyle Cummins, C.B., C.M.G., LL.D., M.D. (Pp. 213; illustrated. 10s. 6d. net.) London: John Bale. 1939.

It is now universally recognized that in the development of tuberculous disease in man "soil" plays a part as important as "seed." In attempting to understand the interrelations between the tubercle bacillus and the varied resistance mechanisms in civilized races the study of tuberculous manifestations in primitive communities must therefore be of obvious value. Writing with the authority based on many years' work in the Tropics and experience as adviser and consultant to the Tuberculosis Research Committee of South Africa, Professor Cummins has performed a service in collecting the information available on this subject. An introductory chapter on wild and domestic life in relation to tuberculosis is followed by a discussion on the definition of "primitive" communities. Professor Cummins points out that words like "primitive" and "isolated" have no clear-cut or definite implications when used to describe human communities; they have a relative meaning only. After sketching the native outlook, he summarizes the work published in the past on tuberculosis of Africans, special chapters being devoted to investigations with the tuberculin test and to tuberculosis in South African natives. There follow sections dealing with the well-known investigations among the native miners of the Witwatersrand with which the author was very closely associated. He then reviews reports on tuberculosis in Africans who have temporarily left Africa, in Africans by descent or American Africans, in American Indians, in primitive tribes of various nationality, and in India. Short chapters are devoted to animal tuberculosis capable of affecting the human body, to B.C.G. vaccination, and to treatment. Finally Professor Cummins attempts to explain the differences in susceptibility found, putting forward his own theory after presenting various points of view hitherto held. He concludes:

> "One thing is certain: that the child, whether in our own race or in the primitive, is alike in having no acquired immunity. The type of disease is similar in the two when disease ensues. But disease nearly always ensues in the negro infant infected with the germ, whereas it is the common experience of our race to bring up healthy but tuberculin-positive children. One must talk with references to averages, and, while it is possible to produce exceptional cases, it is, on the average, easy for the infant of tried stock to elaborate immunity and overcome his infection, whereas it is hard for the primitive child to do so. And it is not only the child but the adult of primitive stock that give us the picture associated with childhood in this country."

The bibliography of 180 references will be found of great value, but it is a pity that a monograph containing so much quoted matter should not have been provided with summaries or conclusions at the end of each chapter. Attention must also be drawn to a typographical defect: in the latter part of the book particularly an unusually large number of words show misalignment of the last letter.

METEOROLOGY AND DISEASE

Essai de Météoropathologie: Physique, Clinique, Thérapeutique. By W. Kopaczewski. (Pp. 296; 14 maps; 26 tables. 50 fr.) Paris: J. B. Baillière et Fils. 1939.

In the introduction to his work on meteoropathology Dr. W. Kopaczewski states that though the part played by various meteorological factors in the appearance of certain pathological conditions has been realized since Hippocrates and emphasized by many subsequent writers, especially Pettenkofer, considerations of the kind have been completely forgotten since the advent of bacteriology, when the microbe became the sole criterion of health or disease. It is in opposition to such an exclusive view that the author has undertaken the present work, in which he emphasizes the important part played by meteorological factors in the causation of disease.

The book is divided into three parts devoted respectively to experimental work, the clinical aspects of the subject, and therapeutics. In the experimental section he discusses the physical data connected with the atmosphere, including chemical composition, degree of dispersion, electric potential, humidity and pressure, as well as the various solar rays. Physiological observations next receive consideration, and an account is given of the action on living beings of radiations according to the length of the wave and of the air according to its degree of dispersion. The author then describes various forms of simple apparatus for carrying out certain meteorological observations such as the determination of the temperature of the air, atmospheric pressure, rate and direction of wind, degree of humidity, and so on. In the clinical section, after a description of the regulating mechanism, including thermo-regulation, barometric regulation, hydro-regulation, electro-regulation and actino-regulation, the author deals with forms of acute meteorological shock liable to occur when the regulating mechanism is upset and the less dramatic morbid manifestations due to heredity or acquired predisposition to the action of meteorological factors. Lastly, in the section of therapeutics he includes an account of the various forms of climate in France illustrated by a number of hitherto unpublished charts supplied by the French Meteorological Office; hygiene, including clothing, housing, diet for predisposed persons; and the treatment of various pathological conditions. An international bibliography of 257 references is appended.

LOWER SEGMENT CAESAREAN SECTION

Caesarean Section: Lower Segment Operation. By C. McIntosh Marshall, F.R.C.S. (Pp. 230; 107 figures; 2 plates. 21s. net.) London: Simpkin Marshall, Ltd.; Bristol: John Wright and Sons, Ltd. 1939.

The author of this excellent book has performed 250 consecutive lower segment Caesarean sections with no maternal mortality. This is in spite of the fact that approximately one-third of his patients were infected or "suspect" before operation. He therefore writes with authority, and he writes well.

> "It cannot be denied that of the women who undergo Caesarean section more than two-thirds die, and barely a third are saved. Caesarean section belongs to those operations of which the outcome is entirely uncertain. Before, then, undertaking this procedure, one should allow the patient to draw up her will and grant her time to prepare herself for death."

The book opens with these words of Osiander and very appropriately ends with an analysis of Mr. Marshall's splendid results. The evolution of technique which in 200 years has converted a lethal operation into a life-saving one is admirably summarized. The anatomy of the uterus, and especially of the lower segment, during pregnancy, labour, and the puerperium is described in detail, and with this as a background the various possible incisions are discussed. The subject of anaesthesia is rightly given prominence. Mr. Marshall compares his experience of ether, spinal, and local anaesthesia with that of many other surgeons, and expresses the opinion that only by the persistent use of local infiltration can the operative mortality be reduced to a minimum.

Anaesthetic and operative technique are carefully described and admirably illustrated, and special attention is paid to the treatment of the infected patient. Readers are reminded that the third stage is of importance with Caesarean section just as with delivery per vaginam, and the methods of avoiding haemorrhage, or of controlling it when it does occur, are carefully described. The place of the lower segment operation in the treatment of placenta praevia is well discussed in a stimulating and slightly provocative chapter in which a reason, and usually an excellent one, is given for every practice advocated.

No obstetrician or surgeon who performs Caesarean section should fail to read this book. It has been most carefully prepared and arranged, is very well illustrated, and must take pride of place as the English classic on the subject.

Notes on Books

A fourth edition of *Hypertension and Nephritis*, by Dr. ARTHUR M. FISHBERG, is published in this country by Baillière, Tindall and Cox at 37s. 6d. This well-established work contains not only an admirable summary of the present knowledge of the subject with ample bibliographies but the result of much personal observation, especially at the Mount Sinai Hospital where the author works. The advances of knowledge in the interval have called for much revision; there is a new chapter on azotaemia, and additions have been made to many sections, for example, the experimental production of glomerulonephritis, the use of mercurial diuretics, the nephrotic syndrome in diabetes mellitus, and the treatment of nephrotic oedema by the intravenous injection of large volumes of acacia solution. Attention is fully paid to Goldblatt's experimental production of hypertension by constriction of the main renal arteries by clamps and the resulting renal ischaemia, and to the possibility that this explanation—namely, obstruction of the main renal arteries—may apply to some human cases without renal artiolosclerosis. The question of hypertension due to factors other than renal, such as adrenal tumours and pituitary basophilism (Cushing's syndrome) is considered. The author prefers the title "the malignant phase of essential hypertension" to the shorter one "malignant hypertension," and emphasizes that this phase is due to damage and necrotic changes in the renal arterioles and glomerular tufts caused by long-continued and very high diastolic blood pressure. He has given much attention to the descriptions of symptoms and the simple methods of diagnosis, and points out that a study of blood chemistry is necessary in a minority only of hypertensive patients.

Two years after the publication of LIONEL FIFIELD'S *Infections of the Hand* its promising author was killed in a motor accident. His thoroughly sound and workmanlike book has been a valuable bequest to many students, house-surgeons, and practitioners, and now a second edition is very welcome (H. K. Lewis, 9s.). Mr. Patrick Clarkson, who has been responsible for this second edition, has revised and rewritten several chapters and introduced references to the newer accessory methods of treatment such as sulphanilamide therapy and short-wave diathermy. He is to be congratulated on a revision which, while still possessing the background of Fifield's work, brings this thoroughly up to date. Mrs. Clarkson's line diagrams are clarity itself and add much to the attraction of the book. The chapter on insurance aspects and prognosis will be helpful to many. The book should be read by all house officers and young practitioners. There is still too much incorrect and inopportune treatment of injuries and infections of the hand through lack of that guidance which such a work as this admirably supplies.

Success with an earlier introductory work on general biochemistry has encouraged Professor ROGER WILLIAMS to write *A Text-Book of Biochemistry* dealing more particularly with animal biochemistry. This stands about midway between the very elementary introduction designed for readers new to the subject and the larger treatises containing a great wealth of detailed information, but it does not consistently maintain that position. In many places the treatment of the subject-matter is that of the first type, whereas elsewhere it offers an unusual amount of detail. For example, tabulated data relating to the composition of body tissues take up 15 pages. Such an array of figures is not in keeping with the expressed intention of the book, which is not to provide a storehouse of information but is, to quote the preface, "to *develop insight* . . . into the phenomena of biochemistry." On the whole the author has succeeded in his primary aim; the relevant facts are as fully discussed as is necessary to the fundamental understanding of the many phenomena brought under consideration; the mode of presentation, despite a number of vague statements, is attractive, and the author takes special care to explain difficult technical terms. He is at his best with the vitamins (sources and requirements are given close attention) and biochemical catalysts, and these sections, coupled perhaps with the brief but very instructive chapter on the chemical aspects of nervous control mechanism, would in themselves establish the book as one well worthy of attention. It is published by Chapman and Hall at 21s.

Professor **HANS KLEINSCHMIDT**, director of the Children's Clinic at Cologne, assisted by nine other writers from Cologne and one (Dr. Heinrich Heinlein) from Bonn, recently published an instructive work on poliomyelitis with special reference to the epidemic at Cologne in 1938. All aspects of the disease are considered, including history, aetiology, epidemiology, morbid anatomy, pre-paralytic and paralytic stages, examination of siblings and children in schools where cases have occurred. The number of cases in the Cologne district (including 399 with 37 deaths in the town of Cologne itself) amounted to 551 with 44 deaths. Apart from several cases occurring in one family, there were no instances of multiple attacks in the same houses, and no doctors or nurses caught the disease. As regards seasonal distribution, the disease appeared in the late summer and autumn months and rapidly declined in the last quarter of the year. Thus of the 399 cases in the town of Cologne there were only 14 cases between January and July, whereas there were 148 in August, 140 in September, 74 in October, and only 17 in November and 6 in December. As regards the occurrence of abortive cases, systematic examination of children who had been in contact with definite cases showed that one-third of the former presented marked changes in the cerebrospinal fluid, though clinical symptoms were trivial or entirely absent. Specific treatment either prophylactically or therapeutically in the form of convalescent serum was disappointing. In contrast with the results obtained in London with the Drinker apparatus, no benefit was derived with the artificial respirator known as Eisenmerger's biomotor during the Cologne epidemic. A bibliography of over 360 references is appended, of which only two are British. The publisher is S. Hirzel of Leipzig.

Congenital fragilitas ossium is the subject of another monograph by Dr. H. **FULCONIS**, who has not only analysed clinical and pathological material but has carried out certain experiments which lead him to suggest that current views on ossification in the normal subject require revision. He brings forward suggestions that there is a definite endocrine control of the laying down of calcium in the bones, and in the treatment of this condition of brittle bones he uses a diet of milk from animals which have been ovariectomized. There is much of interest for paediatricians in this slim volume, which is published in Paris by Masson et Cie at 28 fr.

Preparations and Appliances

LIGHT WHEELED CARRIERS

Dr. A. P. **THOMSON**, F.R.C.P., Commandant of the General Hospital, Birmingham, writes:

Stretcher bearing is heavy work, and to reduce the labour and increase the speed and smoothness of transport of a large number of stretcher cases from the casualty block of the General Hospital to the wards and resuscitation department the Raynal Manufacturing Company, Ltd., Woodburn Road, Birmingham, 21, have designed and made for us a number of the light wheeled carriers (shown in the illustrations) which have proved satisfactory in use. The weight of the carrier is 20 lb., and by means of clips it may be attached to a stretcher (either the old wood and canvas type or the new steel and wire one) so that two bearers can lift both with a patient over obstructions such as a small flight of stairs or a kerbstone. The carrier runs easily and will turn in its own length: one man can push it fully loaded on a smooth surface without difficulty for a considerable distance. It will stand by itself with the patient tilted slightly with the feet down, and even with four folds of blanket under him there is no tendency to slipping. A restless patient should not remain on the stretcher unattended as, although fairly stable, it can be overturned if the patient leans well over the side.

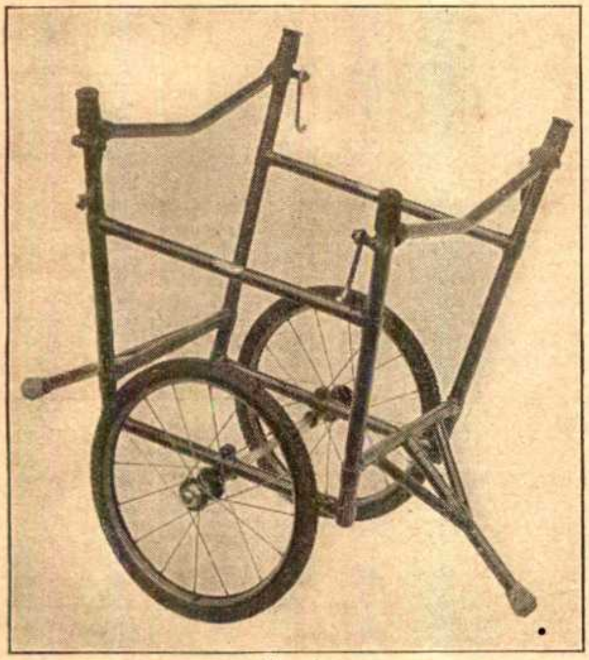

FIG. 1.

Primarily designed for use in large institutions, I believe the carrier would also be valuable in aid posts, general stretcher bearing on paved roads, and on railway platforms for the loading of ambulance trains. The carriers can be stacked in nests of three and occupy little space when not in use. Another type will be available shortly; fitted with more elaborate supports so that with a stretcher it may completely replace the heavy four-wheeled trolley; and (if there is any demand) one fitted with larger tyres and springs for use on rough roads and a collapsible carrier for transport in motor ambulances can be supplied.

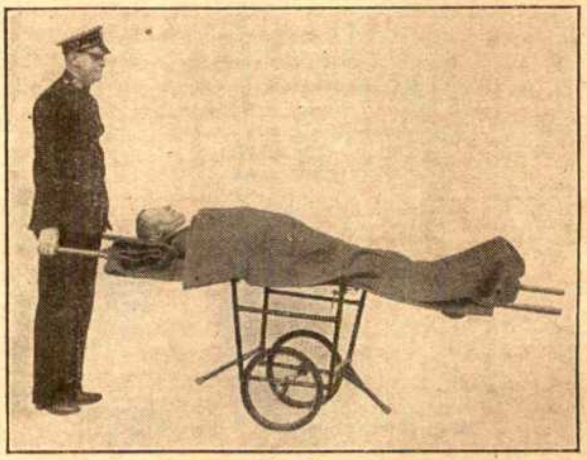

FIG. 2.

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CHEMOTHERAPY AND INFECTIONS IN WAR

It so happens that there was time enough between 1935 and the outbreak of war for extensive study of the action of prontosil and its derivatives in bacterial infections. Though many subsidiary questions in the clinical sphere of this study remain to be settled, and perhaps a few more fundamental problems on its theoretical side, there is now a solid foundation of experience by which intelligent therapy may be directed with a degree and certainty of benefit such as no previous remedy for the same conditions could approach. In present circumstances it is unlikely that further study, either experimental or clinical, will be able to proceed at the same pace, at least in Europe. The uncertainties and anxieties of war, as well as the manifold inconveniences which have been entailed even in preparation for it, impose conditions in which research is the first thing to suffer. What we are probably about to see is not an extension of existing knowledge so much as its application to new conditions. If the medical problems of this war are to be of the same nature as those which arose in 1914–18, we can name beforehand certain infections in which the advent of chemotherapy will alter prospects completely. Meningococcal meningitis will be shorn of most of its previous mortality. The period of invalidity from gonorrhoea will be greatly reduced, and if large numbers of troops are treated in hospital complete control of the patient and opportunity for the fullest possible study of the progress of the disease should lead to the final definition of an optimum plan of treatment; both the choice of drug and the method of using it are at present somewhat varied. If a pandemic of influenza visits us we shall know whether chemotherapy can control the septic pneumonia which caused innumerable deaths in the autumn and winter of 1918.

These and other problems of ordinary medical treatment may prove to be of secondary importance to that of wound infection. It is here that new observations will need to be made and new policies defined. Gunshot wounds, or anything equivalent to them produced by other means, are rare accidents in civil life, and there is singularly little published information on the results to be achieved by chemotherapy in the prevention or cure of infection in such cases. On the other hand, it is safe to predict on theoretical grounds and on the basis of other experience that certain results will be obtained. There need, for example, be no hesitation in assuming that haemolytic streptococcal infection of wounds will be controllable; this was a dangerous and disabling form of sepsis, and in chest wounds often fatal. Among the commoner and usually less dangerous flora of wounds, staphylococci are likely to survive most chemotherapeutic attacks, whereas coliform bacilli, *Proteus*, and *Pyocyaneus*, if they behave in a wound as they are known to behave in the urinary tract, will succumb. It will be a question whether the more rapid closure and healing of a wound possibly so to be achieved justifies such risk and discomfort as adequate chemotherapy entails. Perhaps the most vital question of all is that of the benefit to be expected in gas gangrene. There can be little doubt that sulphanilamide has brought this infection rapidly under control in some cases without the aid of other treatment; no one acquainted with the facts would fail to administer this treatment; and we welcome the recommendation given in a War Office memorandum (published at page 834 of our last issue) that all wounds which appear likely to become the site of infection with gas gangrene should receive a prophylactic course of sulphonamide compounds at the earliest opportunity. How far it should replace amputation is another matter; and another on which clear guidance will be needed is the proper sphere of chemoprophylaxis. This question applies not only to gas gangrene but to wound sepsis generally, and in time it will doubtless be known whether it is the best policy to give every casualty a short immediate prophylactic course, or in certain types of case at least to await events.

In meeting the demands of these new conditions the soundest guide will be a thorough knowledge of the established facts of past experience in chemotherapy. Personal experience is helpful up to a point, but the reasoned conclusions of investigators with special opportunities from all over the world should not be ignored, and whereas most of these have hitherto been available only in original papers, they have now been ably collected and summarized in book form by Perrin H. Long and Eleanor A. Bliss of the Johns Hopkins University, Baltimore.[1] For reasons already suggested, this review of the past four years' developments may have a less ephemeral value than might have been expected. It covers the whole field—historical, theoretical, experimental, and clinical—and whether dealing with the disputed mysteries of how these compounds act or with the simpler facts of how or when they can best be used, the available knowledge is presented in a full but easily assimilable form. Each infection and each manifestation of it is separately treated, so that information can readily be found about the treatment of almost any type of case. The authors express decided personal opinions on matters within their own experience, and though everyone may not agree with all of these, no one will deny that the judgments expressed are in the main well informed and amply founded. To have condensed so vast a body of data into readable but sufficient form is no small achievement, and those who regulate their use of the new chemotherapeutic compounds in accordance with the principles and the detailed instructions here laid down will have good cause to be grateful for such guidance.

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[1] *The Clinical and Experimental Use of Sulfanilamide, Sulfapyridine and Allied Compounds.* By Perrin H. Long, M.D., and Eleanor A. Bliss, ScD. New York: The Macmillan Company. (15s. 6d.)

GENES AND HORMONES

Co-ordination of the results arrived at in different fields of knowledge becomes ever more difficult with increasing specialization, the worker in one field knowing little of what is being done in another, so that advance along a united front is delayed. It was unfortunate that Sir Albert Seward's presidential address to the British Association was delivered on the very eve of war, thus not receiving the attention it deserved. An acknowledged expert both in geology and botany, he turned his life work on fossil plants to good account not only by resurrecting the legendary lost continent of Thule as a scientific reality, but by illustrating the great advantage of combining two methods of approach to a problem. In the same way Professor Danforth in the Harvey Lectures, reviewed elsewhere in this issue, shows that pooling the results obtained in genetics and endocrinology gives us a clearer and more harmonious view of some important biological processes. The basic phenomenon of genetics is believed to be the independence and discreteness of the individual gene. Reproducing itself precisely except for rare mutations, immortal on Weismann's theory, it emerges from each new combination as pure as an atom released from a chemical compound. Genes and cytoplasm may be regarded as symbiotic, the gene influencing the reaction of the cytoplasm to both internal and external stimuli. Hormones may be regarded as activators, but can only act through such protoplasm as will respond to them. The same is true of organizers in the embryo. The specificity of most of their reactions apparently depends more on the receptive capacity of the tissue than on the hormones themselves. It is largely a question of whether or not the tissue will utilize the hormone if it is available. Their effects, if sometimes scarcely less profound, are generally more transient than those of genes. The evolutionist is intrigued by the fact that certain synthetic products can produce similar results. He begins to suspect that a hormone may antedate phylogenetically any adaptation of the tissues for its use. We are reminded of the hermit crab that seizes on an empty whelk shell. The crab was in existence before it found a suitable local habitation. Again, the presence of oestrogens in the coal measures greatly antedates the first appearance of mammals on the earth. Presumably they were first evolved by the plants, and the reason that they are oestrogens at all is inherent in the cyclic character of plant growth. Perhaps we have been prone to draw too sharp a line of demarcation between hormones and vitamins, and between both of them and simple chemical and physical factors on the one hand and genic influences on the other.

The biological advantage of sexual reproduction used to be attributed to a fresh blending of protoplasm and nucleus in the cell. Professor Danforth points out an additional advantage; in parthenogenesis identical genes would be thrown into direct competition with one another in the struggle for existence, with consequent extermination, whereas mixture of genes may lead to improvements perpetuated by natural selection. Without sexual reproduction it is doubtful if the kind of protoplasm which early appeared in the world could ever have reached the high degree of differentiation which the interaction between cytoplasm and new combinations of genes will favour. Botanists long ago pointed out the sequence from zoospore through isogamous gametes to heterogamous gametes and finally to ovum and sperm cell. Sex started as a difference between germ cells and has evolved into a difference between individuals. Indeed, the differences found in various species strongly suggest some such evolutionary sequence. In a vast array of lower animals the stage persists at which each individual may produce either sperm or eggs; age or season may determine which. This is particularly noticeable in the molluscs, where there is a widespread tendency to protandry which in young individuals is capable of overriding the normal female pattern of chromosomes. But when the animal reaches full maturity the chromosomal pattern overcomes the protandry, which, it is suggested, depends on humoral influences. This is strikingly substantiated by the recent studies of Moewus on reproduction in a species of *Chlamydomonas*. Kept in the dark they are without cilia and reproduce vegetatively, but if brought into the light they develop cilia and motile gametes. This will occur even in the dark on the addition of filtrates from cultures grown in the light. If the cultures are grown in red or orange light an inactive form of filtrate emerges. If this is subsequently exposed for a few minutes to blue or to violet light it can activate female gametes, and, then, after another inactive phase, male gametes, after which it remains completely and permanently inactive. Identical results can be obtained in the dark by merely adding a carotene derivative allied to vitamin A. Thus sex seems to be determined by chemical environmental factors in a number of lower forms of life. Such manifestations are suggestive of the hormonal activity seen in higher forms. With some birds certain of these characters seem to be almost completely under hormonal control. Among mammals there is the well-known example of the "free-marten," and sex reversals have been experimentally obtained in mice and rats. In human beings virilism of hormonal origin is clearly recognized. That some such changes can be induced apart from direct interference with the gonads is clear. A piece of skin transplanted at hatching from a male to a female dwarf turtle-dove produces male feathers over an area which goes on increasing. This can only be due to genes and cytoplasm descended from the original transplant, and evidently the female produces no hormone whose action opposes them. A similar experiment in the pheasant produces feathers which are a compromise between male and female plumage, while with the brown Leghorn fowl the feathers are always those of the host. In other words, in the dove sex differences in plumage are regulated by genes without reference to hormones, whereas in the Leghorn they are regulated by hormones without reference to genes. In the pheasant both factors must be operative.

The conclusion seems to be that the gene can influence the chemical make-up of the cytoplasm. In evolution the rearrangement of genes that has been found most advantageous for increasing that influence is the one provided by sperm and ovum. The growing complexity of the resulting protoplasm enables it to react to appropriate extraneous chemical substances. Important among these are the vitamins for which the cell has acquired a need in the course of evolutionary development, and the hormones based on pre-existing chemical material which the body has evolved the capacity to synthesize. These substances may in their turn reinforce the activity of the genes, though in some cases they may diminish or actually override it. Evidently there is close interaction throughout. It is not irrelevant to recall Witschi's observations on the abnormalities of growth brought about by experimentally delaying the fertilization of frog's eggs. The change of the chromosomal pattern and the interference with the chemical organizer thus induced give rise to bizarre types of cells, which in extreme instances acquire the characteristics of malignant growths. Pathological reactions are, after all, special instances of physiological ones induced by some abnormality in the external or internal environment. Only by a fuller knowledge of the normal processes of growth shall we be able to comprehend the nature of malignant growths.

FOOD AND A FIT NATION

In his three Harben Lectures delivered on successive days in the third week of October under the auspices of the Royal Institute of Public Health and Hygiene Sir John Boyd Orr made an extended reference to the importance of nutrition in war time, and recalled instances of the breakdown of nations at war not primarily as a result of military pressure but because of lack of food. The Allies, he said, must win this war at whatever cost; but while armaments were important they were of no use unless there was a fit nation to assemble and employ them. Therefore the feeding of the people in war time became of the greatest importance. It would be disastrous, he said, even from the immediate point of view of the war, if the big improvements in health and physique which had taken place in recent years were not carried further and consolidated. An increased consumption of protective foodstuffs was necessary. The urgent thing was to provide more dairy produce and more fruit. The capacity of the country to produce in these directions had never been anything like fully exploited. Production could be enormously increased, not only on farms but in gardens and allotments, even down to planting lettuces in window-boxes. If the people understood the need, said Sir John Orr, and put themselves to it, the result would astonish agricultural experts. The real aim of the war was something much wider than the destruction of Hitlerism; it was the establishment of international conditions under which the great achievements of science could be used in the creation of a golden age of liberty and peace. In that golden age the primary object of all Governments should be to ensure that a diet fully adequate for health was available to every individual so that he might be able to realize his full capacity for mental and physical fitness. In spite of the preoccupation of national energies in war, the work towards this great objective should by all means be pursued.

In the earlier part of his lectures Sir John Orr said that surveys which had been made in different parts of the world had revealed that people of all nations and classes were on diets which were in some way deficient. On the other hand, medical research had discovered a great new "gold reef" of knowledge with regard to protective foodstuffs. Therefore the campaign had shifted to the economic and educational fields to ensure that these foodstuffs, which were relatively expensive, were made available to the whole community, and to bring the knowledge of them into every household. In this connexion he gave a word of high praise to the British Medical Association on its campaign, started six years ago, towards better nutrition, and for all that its Nutrition Committee had done, by conferences and other means, to instruct both the medical profession and the lay public. As a result of the "big push" in nutrition, through the education of the public, the raised standard of living, the efforts to keep the cost of essential foods low, as well as through various public health measures, notably the provision of milk for school children, the common diet in this country had improved out of all recognition. The striking fall during the last ten years in the infant mortality rate and the tuberculosis rate and the considerable disappearance of deficiency diseases among children must be attributed largely to this cause. Sir John Orr thought that the medical profession deserved great credit for what had been done. It was the profession, especially those members of it who were engaged in preventive medicine, which was able effectively to apply the new knowledge. It was sometimes said that the better health of the people meant the disappearance of the doctor. That was not the case at all. It would require a larger number of doctors, exercising a higher degree of skill, and spending more time over their work, to ensure the prevention of disease and the detection of the earliest deviations from normal health than it would require to deal with gross diseases once these had developed.

THE KENNY TREATMENT OF POLIOMYELITIS

The Kenny method of treatment of infantile paralysis was subjected to a thorough test at the Queen Mary's Hospital, Carshalton, in 1937–8.[1] A report by Mr. Kenneth Starr[2] has now been published upon the experience gained in the Kenny Clinic and in the hospital at Newcastle, New South Wales. The conclusions do not differ appreciably from those of the Carshalton report. Seventy-five of the 114 cases referred to showed actual paralysis, and in some of them it was possible to carry out very early treatment even during the acute stage. The patient was rested in a standard position but without fixed splints, was kept very warm, and was treated by hot baths (without cold douches) and by active and passive movements so far as was possible without producing pain, these movements being given twice daily. The results claimed are a rapid abatement of pain and disappearance of muscle spasm, improvement in the muscle circulation, early return of full range of movement, and restoration of active movement in the non-paralysed muscles, together with diminution in the subsequent stiffness of the region affected. These results, if they are confirmed, are valuable, but unfortunately the amount of pain and muscle spasm varies greatly in different cases and in different epidemics, so that further experience is necessary. It is clear that the Kenny method does not lead to recovery which would not occur under other treatment. Its advocacy of the complete abandonment of splinting is not justified, but there is no doubt that in the hands of many orthopaedic surgeons splinting has been carried out too rigidly, with the result that movement and re-education have been delayed and stiffness increased. Miss Kenny's methods of hydrotherapy are good, but she does not take full advantage of the possibility of re-education of muscle in water. And she refuses to make use of the re-education board as a method of exercising muscles with the elimination of gravity. Mr. Starr's report criticizes strongly Miss Kenny's advocacy of early weight-bearing. Her claim is that this helps to restore muscle function. It is, however, contrary to the principles that have been advocated by most authorities, and there is no doubt that weight-bearing before the muscles are prepared for it may actually delay recovery, quite apart from the risk of damage to joints. It is rather remarkable in this connexion that the report does not refer to the use of supporting appliances. An interesting reference to muscle stiffness suggests that in this there is, first, oedema of the muscle followed by fibrocellular reaction with adaptive shortening, leading to a definite fibrosis. In the Kenny method this is combated by stimulation of the circulation by hydrotherapy and hot fomentations and by active and passive movement. According to this report these movements have a very definite success; in this one respect it is not altogether in accordance with the experience at Carshalton. The muscular stiffness is seen in muscles which are incompletely paralysed and have potentialities of recovery. It seems to be independent of splinting or immobilization, occurring sometimes in cases in which this has never been used, and its duration appears to be little affected by treatment. The Kenny method, like so many that are alleged to be new, includes points that are proving good and others that are not. It has acted as a stimulus to further work and made those who are concerned with the treatment of infantile paralysis review and revise their methods and organization. In this way it has undoubtedly led to improvement.

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[1] *British Medical Journal,* 1938, **2**, 841, 852.

[2] *A Report to the Minister for Health, N.S.W., on Sister Kenny's Method of the Treatment of Infantile Paralysis.* By Kenneth W. Starr, M.B., B.S., F.R.C.S., F.A.C.S.

PREGNENINOLON

Earlier this year we discussed in these columns[1] the chemistry and first clinical reports on the use of an orally active form of progesterone which had been discovered by Inhoffen and Hohlweg,[2] and to which the name "pregneninolon" had been given. In a series of more extensive biological investigations at the National Institute for Medical Research, Hampstead, Emmens and Parkes[3] find that, as with so many of the sex hormones and analogous chemical compounds, pregneninolon is remarkably versatile in its actions. It is equally effective when given by the mouth or subcutaneously in producing progestational changes in the uterus of the immature or ovariectomized rabbit previously sensitized by injections of oestrone. Moreover, it exerts a trophic effect on the non-sensitized uterus of the immature or ovariectomized rat or mouse. This metrotrophic action is similar to that of oestrone and testosterone, and it is not altogether surprising to note that, according to these authors, pregneninolon has an oestrogenic action on the vagina of the spayed rat or mouse and an androgenic action on the comb-growth of the capon. They find that only in the case of its oestrogenic activity is pregneninolon less effective by the mouth than by injection. Quantitatively pregneninolon is ten times less powerful than progesterone in bringing about the progestational changes in the uterus of the rabbit. As an oestrogen it is about 3,000 times less active than oestrone, and as an androgen sixty times less active than androsterone. The probable effect of pregneninolon on the human subject is difficult to assess from these results, since it is well known that there is a large variation in the response of different species to oestrogens and androgens which is in no way related to the differences in body weight. Also the varied solvents that were used would effect the quantitative response. It appears, however, that the clinical doses of pregneninolon are unlikely to have oestrogenic action, and that the possibility of androgenic effects must be considered. Only further clinical experience can decide whether pregneninolon medication over long periods will have such undesirable results. Emmens and Parkes throughout their paper refer to pregneninolon as anhydro-oxy-progesterone; it has also been referred to as ethinyl-testosterone. Such a multiplication of nomenclature is to be deprecated. The name "pregneninolon" was given to this compound by the discoverers, Inhoffen and Hohlweg, and this should be retained until a change, if desirable, is agreed upon internationally. The term "anhydro-oxy-progesterone" is also misleading in that it uses the German prefix -oxy rather than the usual English -hydroxy.

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[1] *British Medical Journal,* 1939, **1**, 1040.

[2] *Naturwiss.,* 1938, **26**, 96.

[3] *Nature,* 1939, **143**, 1064.

BOOK ON WAR SURGERY

The articles appearing each week, from April 15 of this year until the present issue, on the treatment of war wounds and air raid casualties, have been read with close interest and approval both in this country and in the Dominions and Colonies, as is evidenced by the numerous letters we have received, some of which have appeared in our correspondence columns. There have been many requests that the series should be reprinted in book form, and before the outbreak of war steps were taken to put this in hand. Publication has been undertaken by Messrs. H. K. Lewis and Co., Ltd., 136, Gower Street, London, W.C.1, and the volume will be on sale in about a week's time or less (price 10s. 6d.). The early papers in the series were based on lectures delivered at the British Postgraduate Medical School, and these were followed by supplementary articles, contributed by invitation, on psychological casualties, on the medical aspects of chemical warfare, and two articles contributed by medical officers of the Ministry of Health on the organization of the emergency medical services. That on the organization of aid posts proved to be highly topical, and much interest has been shown in the two contributions on war surgery in Spain. War or peace, the essential unity of surgery remains, and the volume now to be published should be looked upon as a companion to the third volume of *Treatment in General Practice,* on anaesthesia and surgery. The surgical series will be resumed in our next issue.

COMPARATIVE MEDICINE

Dr. Louis Bory belongs to the very small band of practising physicians who have taken an interest in the diseases common to both the human race and other animals. A distinguished dermatologist in the first place, it is now many years since he was struck by the importance of comparing the skin diseases of animals with those of mankind, and to that end became an assiduous student at the great French Veterinary College of Alfort. Three years ago, in collaboration with Professor Henry of that institution, he published an essay on comparative dermatology which has had the honour of being included in the Nouvelle Pratique Dermatologique, the great achievement of the French School, which centres round the Hôpital Saint-Louis. He has now produced a more comprehensive work on comparative medicine in which not only cutaneous but diseases affecting other organs are discussed.[1] He includes in his survey both those disorders which attack the animal world spontaneously and those which are inflicted on it by physiologists and pathologists in their search for the solution of some problem of human medicine. Dr. Bory emphasizes the essential unity of human and animal pathology—a unity which is usually neglected by the practising physician, perhaps with some justification, for the modern medical education is sufficiently comprehensive and exhausting without adding to it a course of instruction in veterinary science; but there is no doubt that he is right in saying that every medical man who decides to dedicate himself to research should spend no inconsiderable time in the study of animal and indeed also of vegetable disease. His monograph is gracefully written and deserves to be read by all who are interested in the philosophy as well as in the practice of medicine.

BRITISH SPAS IN WAR TIME

The exigencies of war have, as is well known, placed the spas in a difficult position, and the executive of the British Spas Federation met on October 17 to consider the situation. The British spas are maintaining their bathing establishments in full working order. All treatments and the services of the trained staffs are available as usual. The taking over of spa hotels, which has been the subject of such severe criticism, immediately placed invalids in a very serious position. All the British Spas—Bath, Bridge of Allan, Buxton, Cheltenham, Droitwich, Harrogate, Leamington, Llandrindod Wells, Strathpeffer, and Woodhall Spa—have made arrangements for dealing with difficulties of accommodation, and, contrary to what may perhaps be thought, it is usually possible to meet the requirements of prospective "cure visitors." Such invalids should communicate with the director or manager of the spa they require, or if in further doubt or difficulty with the honorary secretary of the British Spas Federation, either at the Pump Room, Bath, or at the Travel Association Information Bureau, 28, Cockspur Street, London. At no time have the facilities provided by the spas of Britain been more needed. In their equipment and organization and in their general character as health centres the spas have a unique contribution to offer towards maintaining the health of the civil population, and later in restoring the wounded and invalided.

The William Mackenzie Memorial Lecture, on perimetry and the visual pathway, will be delivered by Dr. H. M. Traquair in Faculty Hall, 242, St. Vincent Street, Glasgow, to-day (Saturday, October 28) at 4 p.m. Sir Robert Wilson, president of the Glasgow Eye Infirmary, will take the chair, and Dr. John Henderson, President of the Royal Faculty of Physicians and Surgeons of Glasgow, will present the Mackenzie Memorial Medal to Dr. Traquair.

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[1] *Clinique et Pathologie Comparée.* By Dr. Louis Bory. Paris: Masson et Cie. (50 fr.)

WAR WOUNDS AND AIR RAID CASUALTIES

The following article is a supplement to the lectures on war wounds and air raid casualties. It completes the series, which will now be reprinted in book form

DETONATION OF HIGH EXPLOSIVE IN SHELL AND BOMB, AND ITS EFFECTS

BY

DAVID DALE LOGAN, D.S.O., M.D., F.R.F.P.S.G., D.P.H., M.I.M.E.

Lieutenant-Colonel, R.A.M.C. (Ret.)

PART II

When shells and bombs burst in the open carbon monoxide, with its specific gravity of 0.96 (slightly lighter than air), is quickly dissipated, which makes it useless in offensive gas warfare. In deep trenches under favourable (that is, dull heavy) atmospheric conditions, violent and prolonged bombardment may cause a collection of CO high enough to cause poisoning. British, French, and German observers have proved this by finding CO in the blood of men killed or wounded during the shelling and by observing symptoms of poisoning—headache, giddiness, sickness, loss of consciousness—in a number of those exposed. These symptoms were generally regarded by the men as the result of the noise and the shock of shells bursting in their vicinity. Carbon monoxide has also been discovered in the blood of men killed by the bursting of shells which, though close to them, had caused no apparent wounds; and in the blood of men found in a state of shock under similar conditions. This has been confirmed by French and German investigators.

CO Poisoning from Detonation

Before it was generally recognized that CO poisoning in dugouts and in other enclosed places may follow dense salvos of high-explosive shells, cases of fulminant gas poisoning from detonation of heavy shells, used in 1916 on a vastly increased scale, gave rise to the belief that the different combatants were using a new asphyxiating gas. This idea was strengthened by the fact that all respirators then, as now, gave no protection against carbon monoxide. In a German pamphlet, issued as late as 1918, it was found that the enemy felt it necessary to allay fears prevalent among their troops that the Allies were using a new gas. "The use of special poison gas by the enemy—for example, prussic acid—has not, up to the present time, been definitely confirmed. Cases of death attributed to prussic acid are mostly due to carbon monoxide poisoning."

A shell or bomb bursting in or near a confined place produces large quantities of irrespirable gases which may displace the oxygen content of the atmosphere. In those exposed death may occur very quickly from the deprivation of oxygen as well as from the inhalation of carbon monoxide, the action of which, under these conditions, becomes intensified. Indeed, in such circumstances death may be instantaneous. In dugouts groups of men were frequently found dead, overwhelmed by gas before they were able to make a movement. German officers were found dead while playing chess, one dying just as he was making a move. The sole cause of death in those who were found in dugouts at a distance from the burst was carbon monoxide. During the war a writer in the *British Medical Journal,* discussing these sudden spectacular deaths in dugouts, held that in a number "the true cause was the sudden snatching away of the atmosphere pressure in and around the bodies by the voracious vacuum suddenly produced without." The explanation of this will follow later.

Thousands of soldiers have been poisoned by gas from shells bursting in or near the entrance to dugouts, subways, or cellars, which, under the conditions, ceased to give effective shelter and became mere death traps. Many examples were afforded during the Somme offensive in 1916 and during the French and British offensives of 1917. The following classic examples will give some idea of the dangers:

The Cumont-Mort-Homme tunnel, occupied by the Germans, accommodated brigade headquarters, two battalion headquarters, an aid post, and a kitchen. During the French bombardment both tunnels became crowded with wounded and stragglers from various units. The bombardment blocked all the entrances, and the galleries were flooded with fumes from the high-explosive shells, which asphyxiated most of the occupants, a considerable number of whom died. Six hundred survivors were taken prisoners.

The Tunnel Cornillet, held by the Germans, was composed of three galleries each a thousand feet long and eleven feet broad. There was an exit from each gallery. Ventilation was obtained from hand fans and from a number of ventilating shafts in the roof. There was accommodation for three battalions. During the French attacks salvos of shells bursting near the entrances, already sealed by the explosions, gassed the pioneers and prevented them freeing the entrances. Next day a large shell penetrated the tunnel doing great damage, and another came through the ventilating shaft. Many of the garrison were poisoned by carbon monoxide, and a large number died. The rest were so demoralized that no attempt was made to clear the entrances. Many prisoners were captured. In this case very few deaths were caused by direct violence. The vast majority were the result of gas poisoning.

How Such Accidents were Prevented

In modern trench warfare and aerial warfare adequate underground protection is all-important. The British defence on Givenchy Ridge in April, 1918, forms an excellent example of how the effects of intense shell fire on dugouts may be combated and supports Professor Haldane's plea in *A.R.P.* for deep underground protection.

Several attempts were made by the enemy to capture the Ridge, each attack being preceded by heavy shelling, which, however, failed to crush the entrances to the deep dugouts. Three of the entrances were protected by ferro-concrete monoliths, each with a minimum thickness of four feet; one entrance was in a cellar strengthened by rails and a bursting course, and three other entrances were covered by elephant shelters with a triple course of rails and five feet of broken bricks as a bursting course. Gas, either from explosives or from gas shelling, was prevented from gaining admission to the dugouts by efficient gas curtains and gas doors. The troops were thus perfectly safe, as was abundantly proved by the success of the counter-attacks which cleared the enemy off the high ground.

Gas from the detonation of shells, bombs, mobile charges, minenwerfers, etc., has been known to gain an entrance into cellars and dugouts at some distance from the burst through fissures in the strata or through cracks in the walls of the buildings. In an intensive bombardment by heavy shells or by bombing, the ground in the affected area may become saturated with gas. This is more likely to occur if there has been imperfect detonation of the explosive, or if heavy shells and bombs with time-fuses have penetrated so deeply that when detonation occurred no craters formed. In all these cases gas may find its way into cellars, basements, or dugouts by percolating through the porous ground or through crevices formed in the ground. It is well to remember that when gas percolates through soil it loses its distinctive odour and becomes all the more insidious.

On the Western front hundreds of deaths from CO poisoning resulted from the detonation of mobile charges used for destroying dugouts and subways. The following is a good example of what happens, and it also shows the great value of efficient rescue work.

Preliminary to a hostile raid there was an intense bombardment of the British front line trenches. The ventilation of the infantry tunnel was seriously disturbed by the detonation of minenwerfers which crushed in two of the entrances. Shortly after shelling stopped the entrance to the shaft leading to the tunnel was blown in by a mobile charge brought over by the enemy raiding party. A demolition charge of our own which was in the shaft mouth was fired by the action of the enemy charge. Of thirty-six men who were in the tunnel, twenty-five lost their lives by CO poisoning before they could be rescued. Mine-rescue men with apparatus were quickly on the scene and succeeded in rescuing and resuscitating eleven men, all of whom were unconscious and seriously affected. All these men required oxygen, most of them artificial respiration. In two cases oxygen administration was kept up for ten hours. All recovered. The enemy mobile charge which detonated our charge at the shaft mouth had given rise to large quantities of gas.

It is well to remember that very often more gas is given off when explosives in large quantity are fired in the open than when the explosive is fired after being properly tamped. The fact that ventilation, owing to the entrances having been previously crushed in, was defective would accentuate the action of CO, and the presence of even small percentages of CO would, under such conditions, have serious consequences.

Many cases similar to the above were caused during the frequent British raids on the enemy lines, the tunnellers, who accompanied the infantry, carrying over very heavy mobile charges of high explosives. Owing to the high concentration of CO in these cases, and to the difficulty of setting up good ventilation, the entrances having been destroyed, death would follow very quickly. In some places where there was incomplete detonation of the charges, nitrous fumes as well as CO were formed.

Cause of Death in Concrete Shelters subjected to Heavy Bombardment

Recently questions have been asked regarding the effect on the occupants of concrete shelters of severe concussion from the detonation of bombs. Although aerial bombing, owing to the considerable intervals between bursts, is entirely different from intensive bombardment by shells, it is interesting to recall some experiences during the war.

The nature of the ground on Messines Ridge, where there is a water-bearing sand about twenty feet below the surface, made the construction of dugouts impossible. Ferro-concrete shelters were therefore used and proved of the greatest value in resisting shell fire. A large proportion escaped serious damage, although the entrances were blocked. It is very questionable if the occupants of these concrete shelters could remain in a condition able to fight, or even to survive under repeated concussion from the bursting of heavy shells. It was quite common to find the occupants dead in shelters which had been hit, but not penetrated, by eight-inch shells. In these cases there was no question of gas. A number of these shelters in the village of Messines were practically intact, and yet the wood lining and everything inside was shattered into many pieces, showing that the concussion must have been terrific. Anyone who has experienced, as I have, machine-gun fire in a "pill-box" knows the painful effect the concussion has on the ears, and this would be many times less than the effect of heavy shells landing. Commotio cerebri would be caused by the intense vibrations being transmitted through the bony structures to the central system. Various methods were adopted to lessen the intensity of the shock, but without success. After their painful experience at Messines and Langemarck it was quite common for the enemy to leave the pill-boxes during heavy shelling, and get into neighbouring shell holes, returning to the pill-boxes when the barrage lifted.

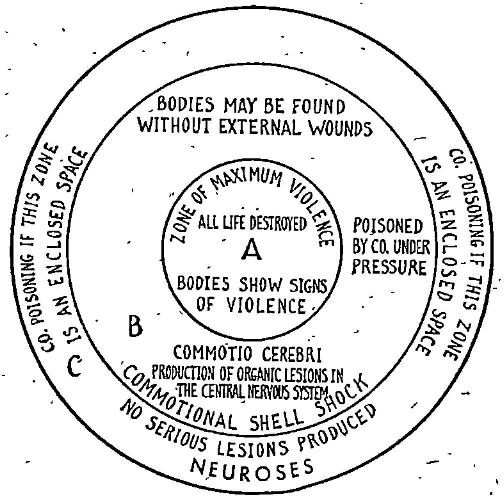
Immediate Effects of Detonation of High Explosives

It is very necessary to understand what happens when a large shell, trench mortar, bomb, or mobile charge explodes. Before considering this I should point out one great difference between shells and bombs or mobile charges. The high-explosive content of a projectile from a gun is greatly reduced by the thick walls of the shell which are necessary to withstand the shock of discharge. The mobile charge or the bomb, on the other hand, is nearly all high explosive.

When a charge of high explosive is detonated there is, first, an enormous expansion of gas. This is referred to as expansion, or explosive wave, or simply as blast, and corresponds to the French "vent du projectile." This is followed by another wave, a tremendous inrush of air, which has been variously described as recoil, suction, or aspiration. Sir Frederick Mott, from the various pathological findings, refers to the first as the wave of compression, and to the second as the wave of decompression. Some observers hold that the latter has even greater destructive action on the human body than blast.

It is not necessary in this article to describe the extraordinarily varied effects of bombing on buildings in cities and towns. This has been very vividly described and minutely detailed by Professor J. B. S. Haldane, John Langdon-Davies, and other writers from their recent experiences in the Spanish War. In order to illustrate the two explosive waves, let me quote Professor Haldane in his most interesting and informative work, *A.R.P.*, which I advise all doctors to read. He describes how, when bombs burst in a Spanish street, the metal shutters of shops which had not been knocked down were sucked outwards, and when a bomb fell inside a house a large part of the shattered walls fell inwards.

Diagram of the Effects of an Explosive Wave


BODIES MAY BE FOUND WITHOUT EXTERNAL WOUNDS
ZONE OF MAXIMUM VIOLENCE
ALL LIFE DESTROYED
A
BODIES SHOW SIGNS OF VIOLENCE
POISONED BY CO. UNDER PRESSURE
B
COMMOTIO CEREBRI
PRODUCTION OF ORGANIC LESIONS IN THE CENTRAL NERVOUS SYSTEM
COMMOTIONAL SHELL SHOCK
C
NO SERIOUS LESIONS PRODUCED
NEUROSES
CO. POISONING IF THIS ZONE IS AN ENCLOSED SPACE
CO. POISONING IF THIS ZONE IS AN ENCLOSED SPACE

Note.—The size of the zones A and B will depend on the amount of explosive in shell or bomb.

By far the greatest number of casualties resulting from detonation of heavy H.E. shells and bombs is caused by flying pieces of shell, brick, stones, and debris, which are impelled at great velocity and may cause death hundreds of feet from the exploded bomb or shell. A considerable percentage of the casualties are caused by crushing, by burying, and by asphyxiation from the collapse of buildings, entrances to cellars, dugouts, etc. Inside the zone of maximum violence bodies may be torn to pieces and mutilated by the force of the explosion. Men may be hurled by the force of the explosion and smashed against buildings or against the ground.

Wounds produced not by missiles but by the explosive waves may be produced (*a*) from without inwards, this due to the enormous compression and velocity of the gases (the explosive wave travels many times faster than the fiercest hurricane), or (*b*) from within outwards, during the recoil.

To give some idea of the intensity of the blast, Sir Frederick Mott, in his book *War Neurosis and Shell Shock*, quotes the American Medico-Military Report, which stated that an "aneroid showed that the explosion of one of these shells caused a sudden atmospheric depression of about 350 mm. of the mercury tube, corresponding to a dynamic pressure of about ten tons to the square yard."

There is no doubt that many cases of sudden death, where no wounds were found, were caused by the severity of the blow over the heart or epigastrium. Sir Frederick Mott believes that the enormous aerial compression "may be transmitted to the fluid about the base of the brain and cause shock to the vital centres of the floor of the fourth ventricle, causing instantaneous arrest of the function of the cardiac and respiratory centres." This, he held, explained many of the cases of sudden death where there were no visible injuries to the body. In describing a personal experience of his own during the war when he was in the vicinity of bursting shells, Professor Haldane thought that death in some similar conditions might be due to paralysis of the breathing.

The second, from within outwards, explains the bursting open of cavities as well as the extensive and strange character of the wounds occasionally noticed in the vicinity of explosions. After the bursting of large shells, bombs, and trench mortars near dugouts or cellars, the parts of the body which would be affected by the suction are those which contain gas, and one would expect to find conditions similar to those produced in accidents in caissons but more exaggerated.

Langdon-Davies, in *Air Raid*, describes how many bodies were found which did not bear a mark of any wound. Mitchener and Cowell have also described similar casualties caused by bombs exploding in narrow streets. On post-mortem examination the lungs were found to be torn and the abdominal viscera ruptured. Early in the great war Adrian Stokes, the famous pathologist, described to me extensive haemorrhages in the lungs with no visible wounds. In the official *Medical History of the War* (vol. i, p. 46), in describing the effect of a trench mortar bursting near a signal dugout in which two signallers were working, the contributor stated that

> "nothing more was seen of either of these men except one of the lower extremities, which was hanging on the German wire about 150 yards away. It had been disarticulated at the hip-joint. The number of men who have completely disappeared during the war, and whose deaths have had to be presumed, suggests that these disruptive effects are by no means rare."

As I have already pointed out, a number of the deaths of occupants of dugouts, especially of those at a distance from the burst, were due to CO. This gas is most insidious in its action. A good example of this was afforded when, during the work of clearing the ruins in Ypres, the bodies of forty British soldiers were discovered in cellars in the Grande Place. Some of the bodies were badly mutilated; those in other parts of the cellar were lying in peaceful attitudes, obviously poisoned by the fumes from the detonation of a large shell.

In experiments carried out in France to discover the effect of detonating 20-lb. charges of ammonal in dugouts, dogs were placed in various positions in these dugouts. Those within the zone of maximum violence were blown to pieces or killed outright by the force of the concussion without showing any injuries, while at a distance some were killed by CO and others seriously affected by it. This is very similar to experiences in the trenches when canisters of high-explosive demolition charges were used to drive out the occupants of dugouts.

Although I have pointed out some of the dangers of shells, bombs, and mobile charges bursting in or near dugouts, cellars, buildings, etc., it must be remembered that in modern warfare life would be impossible without adequate underground shelters, and that these undoubtedly saved many thousands of lives during the great war. In an article in the *Spectator* in February, 1939, I pointed out that

> "the experience of the war and recent experiences in Spain proved that nothing so quickly gives confidence and allays panic in heavy bombardment by high-explosive shells and bombs as the provision of efficient underground shelters. The imperative duty of the Government is the adequate provision of large underground bomb-proof shelters in those cities and towns which are likely to be attacked. Underground accommodation for hospitals on a large scale should be commenced at once. The bombing by the Germans during the war of the crowded hospitals at Etaples may be remembered by many; I saw the ghastly results. Hundreds of the patients, doctors, nurses, and staff were killed or wounded."

These opinions, I may add, have in no way been affected by the last authoritative pronouncement on the subject, which rejected deep underground protection against bombing as unnecessary and undesirable, as well as being economically impossible.

OCCUPANCY TESTS OF AIR-RAID SHELTERS

"To every action there is an equal and opposite reaction." Thus the provision of air raid shelters for all follows on indiscriminate bombing by aeroplane. It is with a sense of relief that we have read the report of some detailed occupancy tests of shelters for factory workers.[1] Such a research indicates the standard of our preparedness. The tests were carried out between April 19 and May 22, 1939, by Messrs. J. and E. Hall, Ltd., in collaboration with some members of the medical profession and the Department of Industrial Physiology, London School of Hygiene and Tropical Medicine.

Shelters for Factory Workers

The shelters employed are of sufficient number and capacity to accommodate the whole staff of approximately 1,700 people. Two types of shelter are adopted—one of steel, completely below ground level, and the other of pre-cast concrete, only partly below ground level. The steel shelter is a standard shelter twenty-seven feet in length with a concrete floor five inches thick. The steel is surrounded by six inches of concrete, the topmost part of which is 1 ft. 9 in. below ground level. It is entered by means of a concrete stairway, through a gas-tight door at one end, and an alternative exit is provided at the other end by means of a gas-tight trap-door reached by a step-ladder. The pre-cast concrete shelter, which is also twenty-seven feet in length, has its concrete floor approximately five feet below general ground level, and the slabs of concrete above earth level are covered with two feet of excavated earth. Both shelters have seating accommodation for fifty occupants, and they are comfortably fitted out with, among other things, electric light, wireless installation, and telephonic communication. The gross cubic capacity per person when full is 24.2 cubic feet for the steel shelter and 27.8 cubic feet for the concrete shelter.

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[1] *Report on Occupancy Tests of Air-Raid Shelters for Factory Workers.* (Pp. 27; 3 folding diagrams. 2s. net.) London: H. K. Lewis and Co.

The tests prove that these shelters can be fully occupied for a period of two hours without ventilation and with exits and entrances sealed against gas without any serious effects on the occupants, although some discomfort and mental impairment may be apparent towards the end of this period. As it will not be necessary to close the gas-proof doors until a gas alarm is given the natural ventilation thereby permitted is enough to maintain comfortable conditions inside the shelters. Further, it is found that discomfort due to heat and moisture accumulation does not arise in a period of two hours, even though no ventilation is provided in the fully occupied shelter. The earth surrounding the shelter keeps the walls cool, and moisture condenses on their surfaces.

Concentration of Carbon Dioxide

It is observed that there is less likelihood of unpleasant concentration of carbon dioxide developing in sealed concrete shelters than in steel shelters; this may be due to the permeability and/or absorbing capacity for carbon dioxide possessed by concrete. After two hours in the sealed-up steel shelter the carbon dioxide percentage is 5.2 compared with 4.3 in the concrete shelter. If it is essential that the individuals in a fully occupied and sealed-up shelter should retain their full mental alertness it is desirable that either artificial air filtration and ventilation should be maintained or adequate oxygen should be liberated at hourly intervals and carbon dioxide continuously partially absorbed by chemicals, such as soda lime, exposed in suitable containers and locations. When no oxygen is added or carbon dioxide removed symptoms appear in all subjects at the end of the second hour, marked panting (leading to thirst, dry mouth, and throat), headache, and lassitude being prominent. At this time the carbon dioxide percentage has increased to above 5, while the oxygen percentage has fallen from the normal figure of 20.9 to that of 14.75. Such a high percentage of carbon dioxide leads to panting, headache, vertigo, nausea, and lassitude, with vomiting as a possible after-effect, while the fall in oxygen percentage is regarded as being a cause of difficulty in mind concentration. When 40 lb. of soda lime are suspended, at the end of the first hour, in forty-seven gauze bags from hooks in a line stretching from end to end of the shelter about one foot below the centre of the arch of the roof, the final figure for carbon dioxide percentage is 3.8 in place of 5.32; a hand-operated fan is used to mix the air. With this reduction of carbon dioxide concentration symptoms are almost negligible.

The condition of the occupants in these sealed-up non-ventilated shelters corresponds to some extent with that of occupants of submerged submarines. Professor J. B. S. Haldane and his colleagues[2] have recently repeated and extended experiments originally started by his father, the late J. S. Haldane, in conjunction with the late Lorrain Smith. Professor Haldane's object was to endeavour to explain the difficulties facing the occupants of the ill-fated submarine *Thetis*. Here the carbon dioxide is regarded as having exceeded 6 per cent., and the results of Professor Haldane's experiments indicate that in each of six persons who have breathed air containing this concentration of carbon dioxide with normal or subnormal oxygen for an hour there has been an aggravation of symptoms other than panting when pure air or oxygen was again breathed, and three out of six vomited as an after-effect.

It is evident that if the occupants of the air-raid shelter described in Messrs. J. and E. Hall's report remain inside much longer than two hours the carbon dioxide would rise above 6 per cent. and similar aggravation of symptoms would be expected as an after-effect. These tests certainly give some indication of the concentration of carbon dioxide permissible in such sealed-up shelters, and the limit appears to be below 5 per cent. Further, the oxygen should not be allowed to fall to 15 per cent. if mental alertness is to be maintained.

Nova et Vetera

THE DIARIES OF PETER CAMPER

Peter Camper (1722–89) seemed to have left very slight traces on the sands of time. It was known that he was interested in midwifery, that he helped Smellie with some of the plates in the *Anatomical Tables*, that he modified a pessary, was an ardent supporter of symphysiotomy, and was successively a professor in the Universities of Franeker, Amsterdam, and Groningen. The plaque made by Josiah Wedgwood preserves for us his personal appearance. The Netherlands *Opuscula Selecta* now publishes the diaries—hitherto unknown—kept by Camper on his three visits to England, the first as a lusty young Dutchman in 1748, the second in 1752, and the third in 1785, when he was a foreign Fellow of the Royal Society.[1] His first visit was made to attend the lectures of Smellie, who was revolutionizing the teaching of midwifery, and of these lectures Camper gives a detailed account, telling of the wealth of material—both living and dead—by which they were illustrated.

But Camper was much more than a man-midwife; he had ample means and first-rate introductions. These he used to the greatest advantage, and, being an encyclopaedist, young, and of a pleasant personality, he went everywhere and knew everyone worth knowing in London. Nothing came amiss to him, and he could hold his own in discussions on comparative anatomy, fossils, books, and pictures. All this he sets down in his diaries, and shows that he was outspoken without giving offence, for when he did not like a thing he said so. His diaries are full of detail, and give a striking picture of English thought and manners in the Hanoverian period: the routes he took in his various journeys, what they cost, the distance and the time they occupied—even such intimate details as "The Fountain Inn in Catherine Street on the left hand where girls can be obtained," and added in pencil, "Mis Jackson at the Tallow Chandlers, Charles Street, Covent Garden."

The diaries for the most part are written in Dutch, which, in accordance with the custom of the previous volumes issued by the Netherlands Society, have the Dutch on one page and an English translation facing it. They are edited by Dr. W. Th. Nuyens, who is to be very heartily congratulated on the completion of his task. He has not only written a full and excellent introduction, but he supplies eleven plates and drawings, adding an appendix of biographical notes on Camper's many friends and acquaintances. An index alone is wanting.

MEDICAL HISTORY OF GUY DE MAUPASSANT

In his thesis (*Thèse de Paris*, 1939, No. 324) on the psychopathology of Guy de Maupassant Dr. Guillaume Delpierre relates that this celebrated writer, who was born in 1850, died of general paralysis in 1893. He contracted syphilis between the ages of 25 and 30, but apart from severe headaches from which he suffered from the age of 26, he did not show any symptoms until 1886, when he presented inequality of the pupils, facial tremor, and dysarthria. It was not until three years later, according to Dr. Delpierre, that general paralysis had a pronounced influence on his work, but while his productive activity diminished his style still remained clear. It was only in January, 1892, or about eighteen months before his death, that after attempted suicide he became an inmate of Dr. Blanche's private asylum, to which he had taken his brother three years previously. Maupassant came of a neuropathic family, and this fact, combined with the cerebral hyperactivity, as shown by his producing twenty-seven volumes in ten years, and physical over-exertion of all kinds, contributed, along with syphilis, to the development of his psychosis.

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[2] *Lancet*, 1939, 2, 419.

[1] *Opuscula Selecta Neerlandicorum de Arte Medica*. No. 15. *The Diaries of Peter Camper*. (Pp. 264; 11 plates, 6 drawings. 2.25 dollars.) Amsterdam: Nederlandsch Tijdschrift voor Geneeskunde. 1939.

FOREIGN PHARMACEUTICAL PRODUCTS

BRITISH EQUIVALENTS AND ALTERNATIVES

In time of war it may prove increasingly difficult to obtain supplies of pharmaceutical products of foreign origin, whether from enemy, neutral, or allied countries. The country must depend primarily on its own resources. These are far more extensive than is generally realized, while special steps have been taken during recent months to meet the possible deficiencies in an emergency. The schedule printed below has been prepared by the Association of British Chemical Manufacturers in order that the medical profession may be made fully aware of the British sources of supply for products which are available in replacement of foreign proprietaries. The information on which the correlation of foreign and British products is based in the schedule is, for the most part, generally available in other published works. While every effort has been made to ensure accuracy, the association cannot accept responsibility for the information it has obtained from these sources.

Steps have been taken to ensure that a number of essential medicinal proprietaries, hitherto imported, will be manufactured as soon as possible in the United Kingdom. Arrangements will be made, by the issue of revised editions of this schedule and otherwise, to announce these developments as they come to fruition, as well as generally to extend the scope of the information contained herein. The Association of British Chemical Manufacturers will welcome observations and suggestions from those who use this schedule, and will be glad at all times to assist in ascertaining for inquirers the British sources of supply in cases of difficulty.

At least one well-known firm of suppliers of products which we understand have hitherto been imported from abroad has announced that stocks which should satisfy normal requirements for a period are available, and that the firm has made arrangements to obtain further supplies manufactured in the U.S.A. Nevertheless it has been considered desirable to include certain of the firm's products in the list in case supplies should run short.

Note.—Bound copies of the complete schedule are available gratis on request to the Association of British Chemical Manufacturers at the address shown below.

166, Piccadilly,
London, W.1.
September, 1939.

KEY

A & H = Allen and Hanburys Ltd.
S A S = Stafford Allen and Sons Ltd.
Boots = Boots Pure Drug Co. Ltd.
B C = British Colloids Ltd.
B D H = British Drug Houses Ltd.
B'ton = Brotherton and Co. Ltd.
B W = Burroughs Wellcome and Co.
W J B = W. J. Bush and Co. Ltd.
Evans = Evans Sons Lescher and Webb Ltd.
Gen = Genatosan Ltd.
G. Chem = General Chemical and Pharmaceutical Co. Ltd.
Glaxo = Glaxo Laboratories Ltd.
G S = Graesser Salicylates Ltd.
H & W = Hopkin and Williams Ltd.
Howards = Howards and Sons Ltd.
Johnsons = Johnson and Sons (Manufacturing Chemists) Ltd.
Kemball = Kemball, Bishop and Co. Ltd.
Laporte = B. Laporte Ltd.
J F M = J. F. Macfarlan and Co.
M & B = May and Baker Ltd.
M C = Monsanto Chemicals Ltd.
Morson = Thomas Morson and Son Ltd.
T & H S = T. and H. Smith Ltd.
Whiffen = Whiffen and Sons Ltd.

Note.—The letter (I) following the name of a British maker and/or supplier means that the material is imported.

The British products shown can be supplied in all the forms (powder, tablet, ampoules, etc.) appropriate for each.

Column 2 gives the British product/s having the same essential composition as the item in column 1. Column 4 gives the British product/s having similar therapeutic properties and capable of replacing the product in column 1.

1 Foreign Product	2 British Product	3 British Maker and/or Supplier	4 British Product	5 British Maker and/or Supplier
Acecoline	Acetylcholine chloride	B D H B W Evans		
Acidol-pepsin	Betaine hydrochloride and pepsin	Boots (I) B D H (I) Evans (I)		
Adalin ..	Carbromal B.P.	A & H (I) Boots (I) B D H (I) Evans (I) M & B (I)		
Afenil	Calcium chloride and urea	B D H Evans		
Agurin ..	Theobromine and sodium acetate	Boots B D H Evans M & B T & H S Whiffen		
Airol ..	Bismuth oxyiodogallate	Boots B D H B W Evans M & B T & H S Whiffen		
Albargin			Silver proteinate B.P.	A & H (I) Boots (I) B D H (I) B W (I) Evans (I) Johnsons J F M (I) M & B (I)
			Collosol silver	B C
Algodorm			Barbitone and amidopyrine tablets B.P.C.	A & H (I) Boots (I) B D H (I) Evans (I)
Allochrysine			Gold succinimide	B C
			Collosol gold sulphide	B C
			Myocrisin	M & B
Aluoin ..	Diamorphine	J F M M & B T & H S		
Alypin ..	Amydricaine hydrochloride	Evans (I)		
Anaesthesin	Benzocaine B.P.	A & H (I) Boots (I) B D H (I) Evans (I)		
Antileprol			Moogrol. Iodized moogrol. Alepol.	B W
			Ethyl chaulmoograte	B D H
			Ethyl esters of hydnocarpus oil B.P.	S A S B D H Evans
Antiphlogistine	Kaolin poultice B.P.	A & H S A S Boots B D H Evans Johnsons T & H S		
	Colloplasma	B C		
Anusol suppositories			Supp. hamamelin co.	Evans
			Anusan suppositories	A & H
			Kaolin suppositories	B C
			H.P. suppositories	Boots (I)
			Sanusin sempules	B D H
			Enule hazeline co.	B W
Aperitol	Phenolphthalein B.P.	A & H Boots B D H Evans M & B M C Morson		
Aphrodine	Yohimbine	B D H (I) Evans (I) Johnsons (I)	Yohimbine hydrochloride	J F M (I)

1 Foreign Product	2 British Product	3 British Maker and/or Supplier	4 British Product	5 British Maker and/or Supplier
Arcanol..			Cinchophen and aspirin	Boots B D H Evans
Argyrol	Silver vitellin	Boots (I) B D H (I) Evans (I) J F M (I) M & B (I)	Collosol silver	B C
	Arvitin	Johnsons		
Aristochin			Quinine ethyl carbonate B.P.	A & H (I) Boots (I) B D H (I) B W (I) Evans (I)
Aristol ..	Thymol iodide	A & H Boots B D H Evans G. Chem Howards M & B Whiffen		
Arrhenal	Disodium methylarsenate	B D H Evans	Soamin	B W
Arsen-triferrin			Iron and arsenic ampoules and/or tablets	A & H Boots B D H B W Evans Glaxo
			Collosol iron and arsenic	B C
Aspiphenin			Aspirin and phenacetin	A & H Boots B D H B W Evans Howards
Asthmolysin			Pituitary extract and adrenaline	A & H Boots B D H Evans
Atocin..	Cinchophen B.P.	A & H Boots B D H B W Evans Howards		
Atophan..	Cinchophen B.P.	A & H Boots B D H B W Evans Howards		
Atophan balsam	Ung. agotan co.	Howards	Analgesic balm	Evans
			Analgesic cream (vanishing)	B D H
			Regesan pain relieving balm	Boots
			Menthofax	B W
Atophanyl			Cinchophen and sodium salicylate	Boots B D H Evans
Atoxyl ..	Soamin Sodium arsanilate	B W Evans M & B		
Aurobin	Crisalbine	M & B		
Bayer 250	Antrypol	B D H		
Betaxin..	Vitamin B$_1$	A & H B C B D H B W Evans Glaxo M & B		
	Berin	Glaxo		
Bioferrol			Hepol with iron	A & H
			Livron	Boots
			Crookes liver iron	B C
			Heprona. Hepatex with iron	Evans
Bismarsen			Biarsamide. Bistovol	M & B
Bismogenol	Inj. bismuth salicylate B.P.	A & H Boots B D H Evans	Bisantol	M & B

1 Foreign Product	2 British Product	3 British Maker and/or Supplier	4 British Product	5 British Maker and/or Supplier
Bismosalvan	Quinine iodobismuthate	A & H B D H Evans Whiffen		
	Quinostab Rubyl	Boots M & B		
Bitaemaine	Benzamine	Boots (I) B D H (I) B W Evans (I)		
Bivatol ..			Stabismol	Boots
			Neo-cardyl	M & B
Bromural	Dormigene	A & H (I)	Carbromal B.P.	Boots (I) B D H (I) Evans (I) M & B (I)
Cafaspin			Aspirin and caffeine	A & H Boots B D H B W Evans Howards
			Crookes antipyretic cachet	B C
Calcimint			Calcium and vitamin D	B C
			Calsolact	A & H
			Calsimil	B D H
			Salpern	Boots
			Kalsolac	Evans
			Ostocalcium	Glaxo
Calcium diuretin	Theobromine calcium salicylate	Boots Evans T & H S Whiffen	Theobromine and sodium salicylate B.P.	A & H Boots B D H Evans M & B T & H S Whiffen
Calcium (Sandoz)			Calcium gluconate B.P.	A & H Boots B D H Evans Howards Kemball M & B
			Calcium laevulinate	B C
			Percalcin	Evans
			Levu-calcin (calcium laevulinate) ampoules	Glaxo
Calsiod ..	Calcium *o*-iodoxybenzoate	Whiffen	Calcium acetylsalicylate	Boots B D H Evans Morson
	Arthrytin	M & B		
Campolon			Hepol. Anahepol. Azoule liver extract	A & H
			Hepastab. Hepastab No. 2	Boots
			Anahaemin. Liver extract (intramusc. inj.)	B D H
			Hepatex. comp. H.C.I.	Evans
			Examen	Glaxo
Cantan ..	Ascorbic acid B.P. (Vitamin C)	A & H Boots B C B D H B W Evans Glaxo	Natural vitamin C.I.	B C
	Celin	Glaxo		
	Planavit C	M & B		
Carboserin			Activated carbon	A & H Boots B D H Evans
			Charcoal and kaolin	Boots B C Evans
Cardiazol	Phrenazol	Boots	Anacardone } For use as cardiac stimulant	B D H
			Nicamide	B W
			Cardatone	Evans
			Dacorene	M & B

1 Foreign Product	2 British Product	3 British Maker and/or Supplier	4 British Product	5 British Maker and/or Supplier
Casbis ..			Inj. bismuth salicylate B.P.	A & H B D H Evans
			Metallic bismuth suspension	B C
			Stabismol	Boots
			Neo-cardyl	M & B
			Bisantol	M & B
Chinosol	Potassium hydroxyquinoline sulphate	A & H (I) Boots (I) B D H (I) Evans (I) J F M (I)		
	Soloid chinosol	B W (I)		
Chloretone	Chlorbutol B.P.	A & H Boots B D H Evans M & B Morson		
Cignolin			Chrysarobin B.P.	A & H Boots B C B D H B W Evans J F M M & B T & H S
Cito-baryum			Barium meal	Boots Glaxo
			Novumbrose. Umbrose	A & H
			Collosol barium sulphate	B C
			Shadoform	B D H
			Barolac	B W
			Fotonemal. Fotamealo. Fotamilko	Evans
Codeonal			Soluble barbitone and codeine	Boots (I) B D H (I) Evans (I)
Compral			Amidopyrine. B.P.	Boots (I) B D H (I) B W (I) Evans (I)
Coramine (Ciba)	Anacardone	B D H	Cardatone	Evans
	Nicamide	B W	Dacorene	M & B
Creosotal	Creosote carbonate	Boots (I) B D H (I) W J B Evans (I)		
Cryogenine			Phenylsemicarbazide	B D H (I) W J B Evans (I) M & B (I)
Cycloform			Benzocaine, B.P.	A & H (I) Boots (I) B D H (I) Evans (I)
Cycloform ointment			Benzocaine, extract of hamamelis, and zinc oxide ointment	B D H (I)
			Ung. hamamelis co. Evans	Evans (I)
Cylotropin			Hexamine, sodium salicylate, and caffeine	B D H Evans
Dermatol	Bismuth subgallate	A & H Boots B D H B W Evans (I) M & B Morson T & H S		
Devegan	Acetarsol vaginal compound	Evans	Silver aluminate	B C
	Stovarsol vaginal compound	M & B		
Dial ..	Allobarbitone	A & H (I) Boots (I) B D H (I) Evans (I)		
Digalen ..			Digitalin granules	A & H Boots B D H Evans
			Diginutin	B W
Digipuratum			Digitalin granules	A & H Boots B D H Evans
			Tab. digitalis leaf B.P.	A & H Boots B D H Evans
			Diginutin. Digoxin	B W
Digitaline Nativelle	Digitalin granules	A & H Boots B D H Evans	Tabloid digoxin	B W
	Digitoxin	Boots J F M (I)		
	Tabloid digitalin cryst.	B W		
Dijodyl ..			Iodoprotein	Boots
			Iodicin	B W
			Iodocasein	Whiffen
Dionin ..	Ethylmorphine hydrochloride	A & H Boots B D H B W Evans J F M M & B T & H S		
Diuretin	Theobromine and sodium salicylate B.P.	A & H Boots B D H Evans M & B T & H S Whiffen		
Duotal ..	Guaiacol carbonate	A & H B D H B W W J B Evans M & B		
Eldoform			Albumin tannate	B D H Evans M & B
Elityran ..			Thyroxine sodium B.P.	Boots B D H B W Evans
			Thyroid B.P.	A & H Boots B D H B W Evans
			Tabloid thyroxine	B W
Elixir Gabail			Elixir bromovalerianate	Boots Evans
			Euvalerol B	A & H
			Collosol bromoform co.	B C
			Elixir valibrom B.D.H.	B D H
Ephetonin*			Ephedrine hydrochloride	A & H Boots (I) B C B D H B W Evans J F M M & B T & H S
Esmodil ..			Acetylcholine	B D H Evans
			Hypoloid acetylcholine bromide	B W
			Pragmoline	M & B
Esterol ..	Benzyl succinate	A & H B D H W J B Evans		
Eugallol ..	Pyrogallol monoacetate	B D H Evans Johnsons		

* Ephetonin, a racemic mixture, is made from synthetic ephedrine, which has less therapeutic activity than the ephedrine (natural) shown as the British alternative.

1 Foreign Product	2 British Product	3 British Maker and/or Supplier	4 British Product	5 British Maker and/or Supplier
Euphthalmine	Tabloid ophthalmic euphthalmine hydrochloride	B W	Atropine sulphate B.P.	A & H Boots B D H B W Evans J F M T & H S Whiffen
			Homatropine hydrobromide	A & H Boots B D H B W Evans T & H S
			Silver with atropine	B C
Euquinine	Quinine ethyl carbonate B.P.	A & H (I) Boots (I) B D H (I) B W (I) Evans (I) Howards (I)		
Euresol ..	Resorcin monoacetate	A & H Boots B D H Evans		
Exalgin...	Methylacetanilide	A & H Boots B D H Evans		
Faexalin Faexin			Dried brewer's yeast	A & H Boots B D H Evans
Femergin			Ergotoxine ethane sulphonate B.P.	B D H B W Evans M & B
Ferronyl	Citrated ferrous chloride B.P.	A & H B D H B W Evans Howards Johnsons	Ferosan	Boots
			Fersolate	Glaxo
Fiatal ..			Female mixed glands	Boots B D H B W Evans
			Sexatones, female	Evans
Fibrolysin	Thiosinamine sodium salicylate	Boots B D H Evans	Iodolysin	A & H
			Thiosinamine ethyl iodide	Boots B D H Evans Glaxo
Fouadin			Antimony sodium tartrate B.P.	Boots B D H B W Evans M & B
			Anthiomaline	M & B
			Collosol metallic antimony	B C
Fraisse's ferruginous ampoules			Iron, arsenic, and strychnine ampoules	Boots B C B W Evans Glaxo
			F.N.S.	A & H
			Ferruginous compound ampoules	B D H
Germanin	Antrypol	B D H		
Gonosan			Sandalwood oil and kava-kava resin	B D H Evans
			Kavol	A & H
			Savaresse's santal	Evans
Gravitol			Ergotoxine ethane sulphonate B.P.	A & H Boots B D H B W Evans Glaxo
			Ergometrine B.P.	A & H B D H B W Evans M & B
			Erbolin	Glaxo
			Ernutin	B W

1 Foreign Product	2 British Product	3 British Maker and/or Supplier	4 British Product	5 British Maker and/or Supplier
Hegonon			Silver proteinate B.P.	A & H (I) Boots (I) B D H (I) B W (I) Evans (I) Johnsons J F M (I) M & B (I)
			Collosol silver	B C
Helmitol	Formamol	A & H B D H Evans H & W	Cystazol	A & H
Hepatopson liq.			Liquid extract of liver B.P.	A & H Boots B D H B W Evans
			Hepol	A & H
			Hepatex	Evans
			Compound extract of liver	Boots
Hexal ..			Hexamine B.P.	A & H Boots B W B D H Evans J F M M & B
Hexophan			Cinchophen B.P.	A & H Boots B D H B W Evans Howards M & B
Hydropyrin	Lithium acetylsalicylate	A & H Boots B D H Evans Howards		
Hypertherman			T.A.B. vaccine B.P.	B D H B W Evans Glaxo
			Normal horse serum	A & H B W Evans
Hypophysin	Pituitary extract B.P.	A & H Boots B D H B W Evans Glaxo		
Ichthalbin			Ichthammol B.P.	A & H Boots B C (I) B D H Evans J F M
Ichthyol	Ichthammol B.P.	A & H Boots B C (I) B D H Evans J F M M & B		
Idozan ..			Dialysed iron	A & H B D H B W Evans
			Neo-ferrum	B C
			Colliron	Evans
Impletol			Procaine hydrochloride and caffeine	B D H (I)
			Arecan spinal anaesthetic	Evans (I)
Inkretan			Thyroid and pituitary	Boots B D H
			Thyrosex	Evans
Iod-calcium-diuretin	Potassium iodide and theobromine calcium salicylate	Whiffen	Potassium iodide and theobromine sodium salicylate	Boots B D H Evans Whiffen
Iodeikon	Iodophthalein B.P.	A & H B D H Evans		
	Stipolac	B W		
	Opacol. Opacin	M & B		

1 Foreign Product	2 British Product	3 British Maker and/or Supplier	4 British Product	5 British Maker and/or Supplier
Iodival ..			Iodoprotein	Boots
			Iodocasein	Whiffen
Iodipin ..	Iodized oil B.P.	A & H Evans		
	Iodatol	B D H		
	Neo-hydriol	M & B		
Iod-tetragnost	Iodophthalein B.P.	A & H B D H Evans		
	Stipolac	B W		
	Opacol. Opacin	M & B		
Juvenin			Yohimbine, nux vomica, and damiana pills	B D H
			Damiana pills	Evans
Kalmopyrin	Calcium acetylsalicylate	A & H Boots B D H Evans Howards Morson		
Keraphen			Iodophthalein B.P.	A & H B D H Evans
			Stipolac	B W
			Opacol. Opacin	M & B
Krysolgan			Crisalbine. Myocrisin	M & B
Lacarnol			Adenosine	B D H
Larostidine	Histidine	A & H B D H B W Evans		
	Stellidin	M & B		
Lenigallol	Pyrogallol triacetate	B D H Evans Johnsons		
Lipiodol	Oleum iodisatum B.P.	A & H Boots B D H Evans		
	Neo-hydriol	M & B		
	Iodatol (iodized oil 40%)	B D H		
Lopion ..			Crisalbine. Myocrisin	M & B
Luminal	Phenobarbitone B.P.	A & H (I) Boots (I) B D H (I) Evans (I) J F M (I) M & B		
	Gardenal	M & B		
	Tabloid phenobarbitone	B W (I)		
Luminal sodium	Soluble phenobarbitone B.P.	A & H (I) Boots (I) B D H (I) Evans (I) J F M (I) M & B		
	Gardenal sodium	M & B		
	Tabloid soluble phenobarbitone	B W (I)		
Magnesium perhydrol	Magnesium peroxide	A & H Boots B D H Evans H & W Laporte M & B		
Mapharsen			Neoarsphenamine B.P.	Boots B W Evans M & B
			Novostab	Boots
			Neokharsivan	B W
			Halarsol. N.A.B.	M & B
Matronax			Ovary and thyroid	Boots B D H Evans
			Thyro-varium	B W
Medinal	Soluble barbitone B.P.	A & H (I) Boots (I) B D H (I) Evans (I) J F M (I) M & B		
	Tabloid soluble barbitone	B W (I)		

1 Foreign Product	2 British Product	3 British Maker and/or Supplier	4 British Product	5 British Maker and/or Supplier
Migrainin	Phenazone caffeine citrate	A & H (I) Boots (I) B D H (I) Evans (I) M & B (I) T & H S (I)		
Myosalvarsan	Sulpharsphenamine B.P.	Boots B W Evans M & B		
	Sulphostab	Boots		
	Kharsulphan	B W		
	M.A.B.	M & B		
Naganol	Antrypol	B D H		
Neocaine	Procaine hydrochloride B.P.	A & H (I) Boots (I) B D H (I) B W (I) Evans (I) M & B J F M (I)		
	Arecan	Evans (I)		
	Planocaine	M & B		
Neohydropyrin	Magnesium acetylsalicylate	B D H Evans		
	Magsyn	A & H		
Neo-oleosal			Inj. bismuth salicylate B.P.	A & H B D H Evans
			Stabismol	Boots
			Neo-cardyl	M & B
Neo-reargon			Silver proteinate B.P.	A & H (I) Boots (I) B D H (I) B W (I) Evans (I) Johnsons J F M (I) M & B (I)
			Collosol silver	B C
			Soloid silver proteinate	B W
Neosalvarsan	Neoarsphenamine B.P.	A & H Boots B W Evans M & B		
	Novarsan	A & H		
	Novostab	Boots		
	Neokharsivan	B W		
	N.A.B.	M & B		
Neostibosan			Antimony sodium tartrate B.P.	A & H Boots B D H Evans M & B
			Collosol metallic antimony	B C
			Soloid antimony tartrate co.	B W
			Neostam	B W
			Anthiomaline	M & B
Neo-trépol	Inj. bismuth B.P.	A & H Boots B D H Evans M & B	Metallic bismuth suspension	B C
	Bismostab	Boots		
	Hypoloid bismuth metal	B W		
	Bisglucol	M & B		
Neutralon			Magnesium trisilicate	A & H Boots B D H M & B T & H S
			Colloidal kaolin	B D H Evans
			Osmo-kaolin	A & H
			Lacto-kaolin	B C
			Collumina. Novasorb	Evans
Noctal ..			Phenobarbitone B.P.	A & H (I) Boots (I) B D H (I) Evans (I) J F M (I) M & B
			Gardenal	M & B
			Tabloid phenobarbitone	B W (I)
			Soneryl	M & B

1 Foreign Product	2 British Product	3 British Maker and/or Supplier	4 British Product	5 British Maker and/or Supplier
Novalgin			Amidopyrine B.P.	A & H (I) Boots (I) B D H (I) B W (I) Evans (I)
			Sonalgin	M & B
			Amidopyrine salicylate	B D H (I) Evans (I)
Novasurol			Inj. mersalyl B.P.	A & H Boots B D H Evans
			Neptal	M & B
Novatophan			Cinchophen B.P.	A & H Boots B D H B W Evans Howards M & B
Novocain	Procaine hydrochloride B.P.	A & H (I) Boots (I) B D H (I) B W (I) Evans (I) M & B J F M (I)	Arecan	Evans (I)
	Planocaine	M & B		
Omnadin			T.A.B. vaccine B.P.	B D H B W Evans Glaxo
			Normal horse serum	A & H B W Evans
Omnopon	Papaveretum	B D H Evans		
	Alopon	A & H		
	Opoidine	J F M		
Orthoform	Orthocaine B.P.	A & H (I) Boots (I) B D H (I) Evans (I) M & B (I)		
Pandigal			Digitalin	A & H Boots B D H B W Evans J F M (I)
			Digoxin	B W
Panflavin			Euflavine	A & H Boots B D H Evans M & B
Panflavin tablets	Planacrine	M & B		
Pantocain			Procaine hydrochloride B.P.	A & H (I) Boots (I) B D H (I) B W (I) Evans (I) M & B J F M (I)
			Béta-borocaine	B D H
			Arecan anaesthetics	Evans
			Planocaine	M & B
Pantopon	Papaveretum	B D H Evans		
	Alopon	A & H		
	Opoidine	J F M		
Parathormone	Parathyroid extract	Evans		
	Euparatone	A & H		
Pellidol ..			Scarlet red ointment	A & H S A S Boots B D H Evans Johnsons M & B
Pentnucleotide	Pentide	A & H		
	S.P.N. Evans	Evans		
Perhydrol	Hydrogen peroxide 100 vols.	A & H Boots B D H Evans Laporte M & B		

1 Foreign Product	2 British Product	3 British Maker and/or Supplier	4 British Product	5 British Maker and/or Supplier
Petein ..	Whooping-cough vaccine	B D H B W Evans Glaxo		
Phanodorm			Allobarbitone	Boots (I) B D H (I) Evans (I)
			Soneryl	M & B
Progynon	Ovostab	Boots (I)	Stilboestrol	A & H Boots B C B D H Glaxo
	Oestroform	B D H		
	Oestrinum	Evans (I)		
			Clinestrol	Glaxo
Prolan ..	Physostab	Boots (I)	Ext. pituitary anterior lobe	Evans
	Antostab	Boots (I)		
	Gonan	B D H		
Proluton	Luteostab	Boots	Corpus luteum	A & H Evans
	Progestin B.D.H.	B D H		
Prominal			Phenobarbitone B.P.	A & H (I) Boots (I) B D H (I) Evans (I) J F M (I)
			Alepsin (for epilepsy)	B C
			Solantoin (for epilepsy)	Glaxo
			Rutonal	M & B
			Tabloid phenobarbitone	B W (I)
Promonta			Casein glycerophosphate	Boots B D H Evans Johnsons M & B Morson
			Bynogen	A & H
			Lecigen	Evans
			Sanatogen	Gen
			Farex	Glaxo
Prontosil album	Sulphanilamide	A & H Boots B C B D H B W W J B Glaxo M & B M C Morson		
	Streptocide	Evans		
			Proseptasine. M & B 693	M & B
Prontosil rubrum			Sulphanilamide	A & H Boots B C B D H B W W J B Glaxo M & B M C Morson
			Streptocide	Evans
			Proseptasine. M & B 693	M & B
Prontosil soluble			Soluseptasine	M & B
			Streptocide solution	Evans
Protargol	Silver proteinate B.P.	A & H (I) Boots (I) B D H (I) B W (I) Evans (I) Johnsons J F M (I) M & B (I)		
	Collosol silver	B C		
Pyoktanin violet	Methyl violet	A & H Boots B D H Evans		
Pyoktanin —yellow	Auramine	B D H		
Pyramidon	Amidopyrine B.P.	A & H (I) Boots (I) B D H (I) B W (I) Evans (I) M & B (I)		
	Tabloid amidopyrine	B W (I)		

1 Foreign Product	2 British Product	3 British Maker and/or Supplier	4 British Product	5 British Maker and/or Supplier
Pyramidon salicylate	Amidopyrine salicylate	A & H (I) B D H (I) Evans (I) M & B (I)		
Quadronal			Antipyrine, phenacetin, and caffeine	Boots (I) B D H (I) Evans (I)
Quadronox			Antipyrine, phenacetin, and barbitone	B D H (I) Evans (I)
Racedrin*			Ephedrine hydrochloride B.P.	A & H Boots (I) B C B D H B W Evans J F M M & B T & H S
Raminal ..			Theobromine calcium salicylate	A & H (I) Evans (I) Whiffen (I)
Sajodin ..			Iodoprotein	Boots
			Iodicin	B W
			Iodocasein	Whiffen
Salipyrin	Phenazone salicylate	A & H (I) B D H (I) Evans (I)		
Salit ..	Bornyl salicylate	B D H Evans M & B		
Salyrgan	Inj. mersalyl B.P.	A & H Boots B D H B W Evans	Neptal	M & B
Sanocrysin	Crisalbine	M & B	Gold succinimide	B C
			Collosol gold sulphide	B C
Santyl ..			Sandalwood oil capsules	A & H Boots B D H B W Evans
			Savaresse's santal capsules	Evans
Selvarol..	Calcium gluconate B.P.	A & H Boots B D H B W Evans Howards Kemball M & B	Calcium lactobionate	A & H
			Calcium laevulinate (Laevulate)	B C B D H B W Evans
			Percalcin	Evans
			Levu-calcin (calcium laevulinate	Glaxo
Sionon ..	Sorbitol	A & H B D H Howards M & B		
Solargentum			Silver proteinate B.P.	A & H (I) Boots (I) B D H (I) B W (I) Evans (I) Johnsons J F M (I) M & B (I)
Solganal			Crisalbine	M & B
Solganal B			Myocrisin (aqueous)	M & B
Solganal B oleosum			Myocrisin (oily)	M & B
Somnosal			Carbromal B.P.	A & H (I) Boots (I) B D H (I) Evans (I) M & B (I)
			Sonalgin	M & B
Spinocain			Procaine, strychnine sulphate, and alcohol	B D H (I)
			Arecan spinal anaesthetic	Evans
			Duracaine (procaine formula P.G.)	M & B

1 Foreign Product	2 British Product	3 British Maker and/or Supplier	4 British Product	5 British Maker and/or Supplier
Spirobismol	Quinine iodobismuthate	A & H B D H Evans Whiffen		
	Quinostab	Boots		
	Rubyl	M & B		
Spirocid	Acetarsol B.P.	Evans	Leucarsone	M & B
	Orarsan	Boots		
	Kharophen	B W		
	Stovarsol	M & B		
Stypticin	Cotarnine hydrochloride	A & H Boots B D H B W Evans J F M M & B T & H S		
Styptol ..	Cotarnine phthalate	A & H Boots B D H Evans J F M M & B T & H S		
Styracol..	Guaiacol cinnamate	B D H (I) W J B Evans (I) M & B (I)	Guaiacol benzoate	W J B
Sulfarsenol	Sulpharsphenamine B.P.	Boots B W Evans M & B		
	Sulphostab	Boots		
	Kharsulphan	B W		
	M.A.B.	M & B		
Superol ..	Potassium hydroxy quinoline sulphate	A & H (I) Boots (I) B D H (I) Evans (I) J F M (I) M & B (I)		
	Soloid chinosol	B W (I)		
Suprarenin	Adrenaline B.P.	A & H Boots (I) B D H (I) B W Evans (I) J F M (I) M & B (I)		
Tannalbin	Albumin tannate	A & H B D H Evans M & B		
Tannigen	Acetannin	A & H B D H Evans H & W M & B		
Tannoform	Methylene ditannin	B D H Evans M & B		
Theocin sodium acetate	Theophylline and sodium acetate B.P.	Boots (I) B D H (I) Evans (I) M & B (I)		
Theominal	Theobromine and phenobarbitone B.P.	A & H (I) Boots (I) B D H (I) Evans (I)		
	Theogardenal	M & B		
Thiocol	Potassium guaiacol sulphonate	A & H (I) B D H (I) W J B Evans (I)		
Thiocol syrup			Bronchial syrup Evans	Evans
Thyraden			Thyroid B.P.	A & H Boots B D H B W Evans
			Thyroxine sodium B.P.	Boots B D H B W Evans
			Tabloid thyroid	B W
Tiodine ..	Thiosinamine ethyl iodide	Boots B D H Evans Glaxo M & B		
	Iodolysin	A & H		

* Racedrin, a racemic mixture, is made from synthetic ephedrine, which has less therapeutic activity than the ephedrine (natural) shown as the British alternative.

1 Foreign Product	2 British Product	3 British Maker and/or Supplier	4 British Product	5 British Maker and/or Supplier
Trikresol	Cresol B.P.	A & H Boots B D H Evans G S M & B M C		
Trional ..	Methylsulphonal B.P.	A & H (I) Boots (I) B D H (I) B W (I) Evans (I) M & B (I)		
Tutocain			Procaine hydrochloride B.P.	A & H (I) Boots (I) B D H (I) B W (I) Evans (I) M & B J F M (I)
			Planocaine	M & B
			Arecan	Evans (I)
Uleron ..			Sulphanilamide	A & H Boots B C B D H B W W J B Evans Glaxo M & B M C Morson
			Streptocide	Evans
			M & B 693	M & B
Unden ..	Oestroform	B D H	Stilboestrol	A & H Boots B C B D H Glaxo
	Ovostab	Boots (I)		
			Clinestrol	Glaxo
Urotropin	Hexamine B.P.	A & H Boots B D H B'ton B W Evans Johnsons J F M	Phospho-mandelate	B C
Valisan ..			Bornyl isovalerianate	B D H Evans
			Menthyl valerianate	A & H B D H Evans M & B
Valyl ..			Bornyl isovalerianate	B D H Evans
Varicophytin	Hypertonic solution sodium chloride with anaesthetic	B D H Evans	Sodium morrhuate	A & H B C B D H B W Evans Glaxo
			Sodium salicylate B.P.	Boots B D H Evans
			Quinine and urethane	Boots (I) B C B D H
			Lithocaine. Episol	B C
			Hypoloid sodium salicylate	B W
			Varixol	Evans
			Ethamolin	Glaxo
			Varicaine	M & B
Veganin	Aspirin, phenacetin, and codeine phosphate	A & H Boots B D H Evans Johnsons M & B		
Veramon			Barbitone and amidopyrine	A & H (I) Boots (I) B D H (I) Evans (I)
			Sonalgin	M & B
Veronal	Barbitone B.P.	A & H (I) Boots (I) B D H (I) Evans (I) J F M (I) M & B		
	Tabloid barbitone	B W (I)		

1 Foreign Product	2 British Product	3 British Maker and/or Supplier	4 British Product	5 British Maker and/or Supplier
Veronal sodium	Soluble barbitone B.P.	Boots (I) B D H (I) Evans (I) J F M (I) M & B		
	Tabloid soluble barbitone	B W (I)		
Vigantol	Liq. calciferol B.P.	A & H Boots B D H Evans Glaxo	Natural vitamin D concentrate	B C
	Viosterol	A & H		
	Radiostol solution and pellets	B D H		
	Ostelin	Glaxo		
Xeroform	Bismuth tribromphenate	A & H Boots B D H Evans Howards M & B Morson T & H S Whiffen		
Yatren ..	Chiniofon B.P.	B D H Evans		
	Quinoxyl	B W		
	Quiniosulphan	M & B (I)		
Zinc perhydrol	Zinc peroxide	B D H Evans H & W Laporte		

Reports of Societies

MALARIA IN WAR

Prophylaxis and Treatment

At a meeting of the Royal Society of Tropical Medicine and Hygiene on October 19, Sir RICKARD CHRISTOPHERS delivered his presidential address on the subject of "Malaria in War."

That there was a connexion between malaria and war, he said, was well recognized. It need not be supposed that the aetiological fundamentals were really different from those dealt with in civil life, but there were features of malaria when it occurred as a concomitant of war which were interesting and important enough to merit further consideration. In the first place, malaria in such circumstances might be much more than merely one of the causes of casualties from sickness; it might modify or even determine the results of a campaign. Again, the epidemiology of malaria in the Army in the field was likely to have features which were by no means necessarily those familiar in civil administration. Lastly, the questions of prevention and even of treatment were quite special in such a setting. Therefore there was a certain justification for the term "war malaria."

Previous War Experience

Turning to malaria in previous wars, Sir Rickard Christophers said that it was surprising that in classical writings concerning the movements of armed nations so little about the effects of malaria was to be found. Yet it was improbable, as some writers had suggested, that malaria was a relatively recent introduction in many countries. In wars since the Napoleonic era malaria did not figure very largely, except in the famous Walcheren Expedition of 1806 and the Chinese-Japanese War of 1897. In the Crimean War, 1854–6, it was not apparent, reading the *British Medical Journal* (or the *Association Medical Journal*, as it was called at that time) that there was a war on at all. In the South African War there appeared to have been only a slight amount of malaria, as also in the recent Italian-Abyssinian War.

The most important malaria experiences in the great war were those in Taranto, Macedonia, Mesopotamia, East Africa, and Palestine. Taranto came into prominence because it was realized early that troops proceeding to Egypt and other theatres of war were becoming infected even by a short stay at this port of South-East Italy. The Macedonian experience was one of the greatest medical surprises of the war, the total casualties from malaria being enormous. During the winter of 1916–17 a quarter of the whole force seemed to have been infected. In Mesopotamia the sickness from malaria was considerable, though not to be compared with the Macedonian incidence. One fact brought out was that admissions to hospital were but a small part of the actual malaria. All units in 1916–17 were supposed to be receiving prophylactic quinine, 5 grains a day; the only thing that could be said about quinine prophylaxis is that the incidence might have been heavier had it not been carried out. With regard to East Africa, the operations involved an average strength of about 50,000 troops, and the admissions for malaria in two years were estimated at 120,000. In Palestine, where in 1918 the troops suffered severely from malaria, vigorous anti-larval measures were carried out, marshes being drained, streams canalized, and wells and cisterns oiled. These and other anti-mosquito operations appeared to have reduced breeding to a minimum at a time when it might have been optimum.

Preventive Measures in the Field

The first measure of control was the constitution of a malaria inquiry laboratory. Without an adequate organization to ascertain the conditions and decide upon the steps to be taken, hopeless confusion could result. In the next place, whatever other measures might be adopted, the necessity for carrying out anti-larval operations would almost certainly arise, at all events to protect base camps and lines of communication.

With regard to quinine prophylaxis, it would be unduly optimistic in face of the experiences in the last war to regard this as a measure which could at any time be relied upon easily to control malaria in an army in the field. If anything was to be achieved in this respect far more attention must be given than at present to preparation and organization. This could be done by ensuring recognition by the higher command of the great importance of this measure, by previous propaganda among officers and men, and by detailed planning as to how the administration was most likely to be facilitated.

Mosquito-proofed huts might again be an important method of control, and the devising of suitable types of hut was worth careful consideration. The mosquito net was the method of prevention effective beyond all others in the hands of the intelligent individual, but the difficulty of utilizing it was great, and insufficient thought had been given to details, especially the means by which the net was to be supported. With electricity and modern facilities there was nothing preposterous in the idea that men might be accommodated in mosquito-proofed huts with electric fans or provided with mosquito nets under conditions in which these could be used. But all this required a good deal of thinking out and experiment before the event.

In conclusion, Sir Rickard Christophers dealt with hospital organization for blood examinations. For this purpose hospitals must have the necessary equipment—not only microscopes, but slides and stains, as well as at least one technician fully familiar with the technique of detection of parasites. He stressed the necessity for planning ahead and for having an effective advisory organization for malaria if there was any probability that large bodies of troops would again be employed in a malarious area.

Malaria in South-Eastern Europe

Dr. C. M. Wenyon said that although malaria undoubtedly figured in earlier wars, what really happened was very vague and indefinite. It was only in the last war that scientific observations were made on the method of spread and attempts at prevention were carried out to any great extent. All his own ideas on war malaria were coloured by his Macedonian experience. It was the occurrence of malaria in Macedonia which stimulated the investigations subsequently through the League of Nations over the whole of South-Eastern Europe. The experience of malaria in the last war had also assisted anti-malarial measures in the Army in India; he was sure that the methods worked out there had been highly successful, and would prove of great service should it be necessary to conduct a war again in a malarious country.

What could be done against malaria in war naturally depended on circumstances. If Gallipoli had been highly malarious it would have been impossible to carry out any considerable anti-malarial measures. Mosquito-proofed huts could not have been provided, and the only conceivable thing that could have been done, where time was of the utmost value and where the troops must not be encumbered with unnecessary material, was some form of chemoprophylaxis. On the other hand, in Macedonia, where the Army was not landed in such great haste, some sort of protection such as mosquito nets was still possible. If the occupation was slower still, as at Taranto, a great deal might be done beforehand in the way of mosquito-proofed huts.

The malarial inquiry laboratory in Macedonia, although sometimes an embarrassment to the D.A.M.S., was of considerable assistance. Such a laboratory had no place in active operations where troops were moved forward, but in static conditions, as in Macedonia, it was able to do much. It was made a rule in Macedonia that streams should be cleared and anti-malarial measures carried out over half a mile around the camps. But although a tremendous amount of clearing of streams was done on a certain plateau just outside Salonika, where there were a number of tented hospitals, the laboratory collected mosquitos regularly in the hospitals; indeed, he doubted whether the transmission rate was really reduced. It was possible that Paris green would have helped to extend anti-larval activities effectively further afield. Quinine prophylaxis seemed to do practically nothing to control the infection, but it definitely controlled the disease. When taking quinine the men did not go sick so often. Quinine, in other words, did not stop the infection, but it prevented the disease from showing itself. Nowadays atebrin might probably be used for therapeutic purposes, and quinine kept for prophylaxis. The mosquito net probably did more to prevent malaria than all the other measures in Macedonia put together. He believed that by the personal use of the net he had himself warded off at least 99 per cent. of possible bites from the anopheles.

Army Anti-malarial Organization

Major-General Marrian Perry (director and professor of pathology, Royal Army Medical College) said that he would be a brave person who hazarded a guess whether troops would be sent to a malarious station during the present war, but it might be interesting to outline briefly the organization for the laboratory diagnosis of malarial infections in the Army. At the base in an infected area there would exist fully equipped laboratories staffed by pathologists, with technicians adequately trained in diagnosis and in the identification of these infections. Further forward in the casualty clearing station area centres for laboratory diagnosis would be provided. There would be mobile laboratories serving a group of stations, and in each of the stations there would be a clinical side-room with all the necessary equipment for malaria diagnosis. In addition, within recent years there had been made available for the more advanced medical units, such as the field ambulance, easily transportable malaria-diagnosis panniers containing all the essential equipment—microscopes, stains, slides, etc. These panniers had already been in use in Palestine and on the North-West Frontier, and had been reported on satisfactorily. Malaria-diagnosis panniers would also be held in reserve at the base hospital laboratories, and could be sent forward with a detachment from those laboratories and begin work at once in any locality. Thus it would be evident that there was a plan for a chain of diagnostic centres from the forward areas to the base, and that mobile diagnostic malaria units would also be provided.

In addition to the regular R.A.M.C. officers who received a full-course of laboratory training at the R.A.M. College short-service commissioned officers liable for service abroad received a short intensive course of such training in which malaria diagnosis played a prominent part. The question of training of laboratory technicians had also not been overlooked. A large number of laboratory assistants had been enlisted and formed a pool. These were being trained in malaria diagnosis as well as in other matters. With regard to the supply of drugs other than quinine it had been ascertained that the manufacture of atebrin would be carried out in this country within the next few months. The question of the home manufacture of plasmoquine was rather more difficult but was under careful investigation. No difficulty need be anticipated with regard to stains. The Director-General of the A.M.S. was fully alive to the importance of this whole subject, and the speaker had his authority for stating that he would avail himself of the knowledge and assistance of expert malariologists should the necessity arise.

Recent Experience of Anti-malarial Measures

Colonel J. A. **Manifold** said that since the last war the Army had been continually dealing with these malaria problems, especially in India, and during the last two years in Palestine under war conditions. Therefore it was not necessary to go back to the experience of 1914–18 so far as the Army was concerned. For fifteen years to his knowledge an excellent organization had existed for the purpose. In India it was not so much to the Army authorities as to the rural councils and municipalities which controlled the civil population that warnings should be addressed. It was the infected civil population on the Army boundary which was the serious factor. It seemed to him that Sir Rickard Christophers had assumed that propaganda among the higher command was necessary, but if he knew the higher command at the present day he would realize that very little propaganda was needed. In the Jordan Valley in Palestine in 1938 the ratio of malaria was 13 per thousand. To one like himself, who had spent some years in a part of Africa where the ratio was some hundreds per thousand, it seemed that anti-malarial measures as organized in Palestine were very efficient. The same was true of Egypt, where the ratio was 3.8 per thousand, although the actual forces employed in Egypt at the time were quite large. The use of mosquito-proofed huts with electric fans had been mentioned. This was an organization which had to be faced at some stage, but until one knew where the Army was actually going and whether shipping and timber would be available, the provision of huts could hardly be demanded. A bivouac tent was tried out last year in Palestine, and he was told that it was very good. He spoke of the great value of the prophylactic dose of quinine, and also stated that anybody taking quinine in a blackwater area was very unlikely to go down with blackwater.

Colonel S. P. **James** said that in view of the careful work of the Malaria Commission of the League of Nations there were not likely to be the great medical surprises which occurred in the last war even if the present one should extend to operations in malarious country. The question arose whether it would be necessary always to carry out anti-larval operations in war time in the field. It would depend on the locality in which the operations were conducted. In many potential war areas it would be quite impossible to hope that any anti-larval operation could meet with success. In the last war almost nothing was more tragically ridiculous than the immense but quite futile efforts in the way of anti-larval operations in places where success was beyond the power of man. Of course, the difficulty was that sanitarians and others were very loath to discard such measures, but that was an administrative difficulty which in war time might be overcome. He favoured the concentration of measures applicable to the individual soldier and to the barracks, hut, or tent in which he lived rather than on indirect measures in the general environment. The daily systematic use of insecticidal sprays in barracks and outbuildings was recommended by the Malaria Commission and had given excellent results in many countries where it had been employed, and now that very efficient sprays were available he thought this was a measure for which energetic preparation ought to be made. The other two direct measures were mosquito nets and quinine prophylaxis. Every soldier ought to be provided with a mosquito net of a proper pattern and trained in its use with the same care and attention as he was doubtless trained to use his gas mask. As to quinine prophylaxis, there was no doubt about the efficacy of that measure. In war time they ought to forget that quinine did not prevent infection, and to concentrate on the fact that 5 grains of quinine a day would prevent clinical attacks.

Dr. P. **Manson-Bahr** mentioned his experience of malaria in Palestine in the last war. No planning could take place beforehand and everything had to be improvised. It fell to his lot at the end of 1917 to train officers and men in the field in the technique of diagnosing malaria. Malaria-diagnosis stations were formed, the great point about them being their extreme mobility. They were mounted on general service wagons and provided with microscopes, stains, and syringes. These followed the cavalry as far as Aleppo, and in two months 40,000 blood slides were examined, and the total number of blood examinations carried out in the last year of the war was 146,000, being practically equal to the whole force in the field. The great danger to troops in the field was the subtertian parasite, the incubation period of which was ten days.

Sir **William Willcox** added a few words about his experience of the campaign in Mesopotamia, where he worked with Sir Rickard Christophers. The curious feature was that in the mountainous regions high above sea level a more virulent form of malaria was present than in the swamps down below. He also thought it important to remember in war time that if there was an epidemic of malignant influenza it might be complicated by malaria acting in a symbiotic way.

ORGANIZATION AND TREATMENT OF AIR-RAID CASUALTIES

Dr. J. Trueta of Barcelona at Royal Society of Medicine

A meeting comprising several Sections of the Royal Society of Medicine on October 24 was addressed by Dr. J. Trueta, late director of the department of surgery, General Hospital of Catalunya, Barcelona, on the organization of hospital services for casualties due to the bombing of cities. Mr. T. P. McMurray, president of the Section of Orthopaedics, was in the chair, and the meeting was crowded, 350 being present.

Dr. Trueta said that he was glad to have the opportunity of describing his surgical experiences during the Spanish War in the hope that they might be of use to his British colleagues. The first bombardment of Barcelona was from the sea in November, 1936, when there were 100 casualties among the civil population. Air raids afterwards occurred with increasing frequency, and the hospitals altered their organization as experience demanded. For example, first-aid posts separate from hospitals were abandoned when it was found that they delayed complete treatment and resulted in an increase of mortality.

The Spanish War was the first in which what were described as "total population" tactics were employed. Barcelona and the adjacent towns and villages underwent more than 340 bombardments. The attacks were carried out for two purposes—to bomb military objectives and to terrorize the civil population. The material used in the attack differed according to the purpose in view. Against military objectives the bombs usually employed were heavy ones, weighing more than 600 lb., and the explosions produced great damage. He had seen concrete buildings nine stories in height completely destroyed by such bombs. When they fell in the street they produced cavities from ten to fifteen feet deep, with an enormous dispersion of shell fragments in an upward direction.

Another type of bomb used against buildings was the small incendiary bomb weighing only 2 or 3 lb., several hundreds of which could be carried in an aeroplane. On the buildings of Barcelona, which were chiefly of steel and concrete, the damage done by these bombs was unimportant, and their use was presently abandoned. But against buildings of lighter material, such as those at Guernica, they continued to be used. The light bombs used for terrorizing the civil population were covered with some material like aluminium, and produced thousands of splinters, many of them no larger than a finger-nail. These fragments produced great injury to the tissues, out of all proportion to the apparent damage to the skin.

Casualties in Bombarded Towns and in Front-line Warfare Contrasted

The wounds caused by the heavy bombs were very severe, and only a few cases survived. The transport of such cases was difficult, for shock and haemorrhage were increased with movement. Dispatch to the nearest hospital for complete treatment was the only measure which could save life. Those injured in the collapse of buildings as the result of explosions also needed immediate assistance, and even when such assistance was forthcoming mortality was very high. Cases should be treated in the hospital within two hours of the injury. There was a difference in this respect between casualties in a bombarded town and those occurring in front-line warfare. The latter were due to rifle and machine-gun bullets and to shells, which, if not very near, were not so destructive as aerial bombs. The changing position of the front line in trench warfare required the establishment of hospitals at a sufficient distance behind the lines, out of reach of heavy artillery, and in the front line the collection of casualties was continued systematically. In the open, bombarded town, on the other hand, the gravity of the casualties, the proximity of the hospitals, the fact that many victims were injured simultaneously and included women and children, and the absence of rigid discipline made a different organization necessary.

The methods of dealing with the injured in a bombarded town had more in common with those used in towns besieged by armies than with those employed in front-line fighting, though many surgeons who had experience of a besieged town would say that there was always in such conditions the possibility of transporting the victims to safe hospitals, whereas in a city subject to air attack there was no safe place at all. This, however, was only relatively true, as experience in Barcelona had shown. In the city itself there were five hospitals, not one of which was ever hit in the bombardments, but hospitals in the surrounding country, outside the defended area, were bombed several times and put out of action. In one raid alone, when such a hospital suffered, eighty-three were killed and 118 wounded. The reason for this difference was that when attacking planes were flying over defended territory they had to fly at great altitudes, with consequent lack of precision. For example, the electric power station in Barcelona was repeatedly attacked but only once slightly damaged, whereas a factory in a village forty miles away was attacked four times and entirely destroyed.

Getting Casualties to Hospital

Dr. Trueta strongly urged that first-aid posts should be located in the hospitals of the towns subject to bombardment. More than 30 per cent. of the patients needed operation, and whatever facilitated rapid admission to hospital contributed to the more favourable outcome of the treatment. He gave a picture of the pressure on the casualty service during a three days' bombardment of Barcelona in March, 1938, when sixty doctors at the hospital worked almost uninterruptedly for the whole seventy-two hours, and the surgical units were completely exhausted after carrying out 731 operations.

Speed of transport was the first essential. He operated on one victim who had been transported five miles in eighteen minutes; generally about twenty or thirty minutes were taken to cover such a distance. The immediate intervention of the surgeon at the hospital was the only useful form of first aid other than the application of the tourniquet to a limb if there was excessive bleeding. The application of splints, bandages, and other forms of first aid at isolated posts was not only useless but actually dangerous, because it delayed surgical treatment. Such first-aid posts as were organized in Barcelona during the early days of the war were useful only for the treatment of slightly wounded cases and for reassuring the nervous, and the first-aid post in the hospital itself could equally be used for the treatment of the slightly wounded, but only after they had passed through the classification room.

A perfect circulation of ambulances was necessary. A great difference of efficiency was noticed as between two hospitals in Barcelona, one of which had made no provision for the circulation of ambulances, so that much confusion and delay ensued, while the other, having large gardens in its vicinity, was able to impose a system of one-way traffic.

A crucial point was perfect co-operation between the services, especially between the centre for the classification of the wounded and the various operating theatres and wards of the hospital. The casualties should be classified into five groups:

1. People who required immediate operation and whom it was impossible to send out of hospital immediately after treatment.
2. Those who required immediate operation and could be evacuated afterwards.
3. Those who needed immediate treatment and rest without operation and could not be evacuated.
4. Those who after receiving first-aid could be transferred to the base hospital for future treatment.
5. Those who could go home after first-aid treatment.

In the classification room an appropriately coloured card should be attached to each injured person. The director of the classification unit should know the number of surgeons and operating tables available and the specialty of each surgeon, so that the cases might be distributed according to capacity and with some regard to the pressure on each operator. In the surgical units in Barcelona general practitioners and specialists were included, the specialists including an ophthalmologist on account of the frequency of eye injuries. A twenty-four-hour service was established with six units, each made up of eight doctors. Each of the units in turn remained in hospital for twenty-four hours consecutively, and the others were at call.

Clinical Features of Air-raid Injuries

The clinical features of the injuries (Dr. Trueta continued) varied according to the nature of the bombardment, though it was very common to have different types of bombs used in the same raid, and in most raids casualties were also produced by falling masonry. In undefended areas people were frequently wounded by bullets fired from low-flying planes. Generally speaking, those wounded in the streets were less seriously injured than those in fallen buildings. In many raids there were people so gravely wounded with multiple fractures, internal haemorrhage, and gross injuries of chest and abdominal viscera that no surgical treatment was of any help. A feature common to all the injured, especially those injured by fallen buildings, was a marked fall of blood pressure, with a waxy pallor of the skin; they were in a state of mental excitement, but mental depression was rare except in those so gravely wounded that all treatment was hopeless. It was very impressive to see a great collection of wounded directly after an air attack. They were extremely quiet, and there was little crying or moaning in spite of grave wounds, in marked contrast to the excitement and noise of their uninjured friends and relatives.

The types of injuries produced by the bombs could be classed into those produced by heavy bombs and those by light ones. Wounds produced by big shells coming from heavy bombs which fell in the streets but which were aimed against buildings were very destructive, having the character of wounds produced by artillery fire. The following table represented an attempted grouping of wounds; many of these patients, of course, had minor injuries in other parts of the body:

Multiple major injuries	32.6 per cent:
Lower limbs (including hips)	22.3 „ „
Upper limbs (including shoulders)	14.7 „ „
Thorax	12.1 „ „
Abdomen	9.1 „ „
Head (skull and face)	8.2 „ „

In speaking of surgical technique, Dr, Trueta said that he had several times seen infective complications due to insufficient operative exposure. Many of the patients wounded in the abdomen by heavy bombs entered the hospital with great lacerations which made impossible all attempts at intestinal reconstruction. He could recall only two such cases which survived. In the thorax the heavy bomb injuries caused open chest wounds, which were always extremely grave owing to haemorrhage and shock. It was necessary in many cases to practise pneumonectomy. When the first danger was over it was common to see infective complications in the pleura and pleural adhesions, and in several cases he had seen paraplegia following fracture of the spinal column associated with chest injuries. Patients severely wounded in the head by these large bombs rarely arrived alive at hospital, but he had had cases in which the only surgical treatment called for was excision of the edges of the wound, removal of the damaged tissue, and aseptic dressing. Meningo-encephalitis was the most frequent cause of death after these head injuries.

Injuries by Small Bomb Splinters

The small bombs used on Barcelona to terrorize the civil population gave wounds whose appearance differed completely from those inflicted by the heavy bombs. The bombs had great expansive power. A large number of little splinters from them entered the skin—especially the skin of the legs, because the splinters had a horizontal projection—and the skin lesion was painless and without haemorrhage, so that the fact of injury was overlooked in many cases. There was great disproportion between the size of the splinter and the damage done to fascia and muscle; this was to be attributed to the spin which the splinter possessed. Severe comminuted fractures were frequently seen, with great displacements, caused by a very small splinter. It was necessary to operate on all fractures produced by these small splinters, notwithstanding that the minor importance of the skin lesion might lead one to treat them as if they were closed. That mistake had led to several deaths from septicaemia, and especially gas gangrene.

Wounds of the abdomen were generally penetrating and laparotomy was necessary. Rupture of the liver as the result of a small splinter injury was not uncommon, nor was injury of the spleen, which made removal necessary. In the chest these splinters produced very small penetrating wounds, frequently causing severe haemorrhage. It was only the cases with such haemorrhage which needed immediate operation. Generally immobilization of the chest, with rest and morphine, was sufficient, though later operation might be necessary on account of some complication. In the brain the splinter might lie deeply, and owing to the fact that many civilians lay on the floor during an air raid splinters were frequently localized in the base of the skull.

As for casualties produced by falling masonry, the injuries in this group were of all kinds, but there were some common characteristics. The patients generally arrived at hospital covered with dust, making them unrecognizable; they were in a state of shock usually combined with some concussion, and they expressed their feelings with clearness but with indifference. Many of them had numerous injuries, fractures, haemorrhage, rupture of the liver, kidney, or spleen, and showed general collapse. It was not often possible to operate on these casualties immediately because surgical intervention increased the shock, but fortunately in many cases, when shock diminished with appropriate treatment, it was possible to perform an operation.

Classification of Cases

Following upon an air raid, all the injured people arrived at hospital within a very short time and classification was the first procedure. It was possible to send many casualties to base hospitals, but a rigid classification could not be made, for the patient was more important than the lesion, and similar lesions resulted in cases of very different degrees of gravity. Generally speaking, injuries which needed immediate operation included cases in which there was severe haemorrhage, open chest wounds, and injuries involving great destruction and laceration. Other injuries which in most cases needed immediate operation were major wounds of the head, combined fractures, and penetrating wounds in the joints. Injuries which could be sent to the base hospital without operation included penetrating wounds of the skull caused by small splinter bombs, many combined fractures from small splinters, and injuries from falling masonry. Casualties which must remain in the clearing station without operation included those with great shock and those with closed penetrating wounds in the chest. With these criteria it was possible to make a careful selection, but a classification must be made from clinical data in each case. He added that operations should be carried out only on those cases which it was possible to save. Instead of losing time over hopeless cases all energies should be concentrated on those with a better chance of recovery.

Questions and Discussion

In reply to a questioner who asked his opinion of the mobile first-aid units, several of which had been commissioned in one London borough, Dr. Trueta said that in Barcelona during the first year of the civil war an organization of that kind was arranged, with five mobile units, but later they were abandoned and every kind of transport was commandeered for taking all patients direct to hospital. The hospitals in every district carried out first aid, classification, operative work, and evacuation to base. In reply to another question he said that an abundant supply of plaster-of-Paris was ensured in Barcelona, gypsum being a Catalonian product.

Professor J. Duncan White inquired what proportion of the surgically injured required immediate *x*-ray examination before surgical intervention. It was a frequent instruction that every case in which bone injury was suspected should be *x*-rayed, but this would mean a tremendous organization in air-raid casualty work. Dr. Trueta replied that in Barcelona after every important bombardment it was impossible, with very few exceptions, to *x*-ray cases before treating them.

Professor G. R. Girdlestone said that in a previous conversation with Dr. Trueta he had gathered in rather more detail than Dr. Trueta had had opportunity to give on that occasion what happened when the patients got to hospital. They were all taken into one biggish room staffed by second-grade—that is, less experienced—medical personnel. Here a preliminary classification was made, and the casualties were drafted rapidly to the first-aid post, which was also in the hospital. The work at the first-aid post came after the large preliminary examination. Other cases went on to a second classification room, where the patients were completely undressed and inspected by medical personnel of great experience. Here the cases were graded in order of priority—those which needed immediate operation, those which could be sent to the base hospital without operation, and those which must remain without operation at the clearing station—according to the scheme which Dr. Trueta had described; but it was necessary, as he had said, to bear in mind that the individual patient was more important than any standard classification. It was the surgeons who decided what must be done, and the classifying surgeon directed the patients to the different surgical teams, not only in accordance with priority and need for operation, but also having in view which surgeons would be best able to deal with the particular type of injury. This second classification required judgment of a very high order, and as a result of it the patients were drafted to the theatre, the resuscitation room, or the wards, as the case might be.

Mr. Rowley Bristow, in moving a vote of thanks, said that it looked as if a very careful reconsideration of some of the arrangements in this country might well be made following on the lines of the address which Dr. Trueta had given, and the sooner his address was published, read, and digested the better for those who controlled their destinies and the destinies of their hospitals.

Local News

ENGLAND AND WALES

Mental Health of Children

The Child Guidance Council reports that of forty-three recognized child guidance clinics in England and Wales, twenty-five are still open. This number represents all clinics except those in London and Southampton, and they as usual undertake the treatment of nervous, difficult, delinquent, and retarded children. Some of these clinics are situated in receiving areas, and so are available for the treatment of the more seriously disturbed evacuees. Addresses of these clinics and particulars of sessions, etc., may be obtained from the Council's new offices at 23, Queen Square, Bath (telephone: Bath 2390). It is hoped that some of the London clinics may reopen shortly. The Tavistock Clinic Children's Department has been removed to Westfield College, Kidderpore Avenue, N.W.3, and is open, but unable at present to receive non-paying patients. The West End Hospital for Nervous Diseases children's department is closed, but juvenile cases can be seen in the general psychotherapy department. It is hoped that the clinics attached to St. Thomas's Hospital and the Queen's Hospital may reopen shortly. Urgent cases can be seen at the child guidance unit at Great Ormond Street Hospital for Sick Children. The Maudsley Hospital is closed and removed to Mill Hill Emergency Hospital, but work for children is being carried out at the following London County Council "North" London Clinics: St. Mary's Hospital, Highgate; St. Charles's Hospital, Ladbroke Grove; Mile End Hospital, Bancroft Road, E.1. Cases can be seen at these hospitals by appointment only.

Arrangements under Cancer Act

The Minister of Health, in a circular (No. 1884) to county and county borough councils, states that he has decided to extend until March 31, 1941, the period in which they have to submit their arrangements under the Cancer Act, 1939, for his approval. The Act provides that the arrangements must be submitted within one year from its commencement—that is, by March 29, 1940—or such longer period as the Minister may in any case allow. The Minister states that he realizes that by reason of the heavy pressure of extra work in recent months it has not been possible for local authorities generally to give such attention to the matter as would enable them to submit their arrangements within the statutory period, and he has therefore granted a general extension of just over twelve months.

The National Central Library in Time of War

In times of peace the British Isles has, in addition to a splendid public library service, a system of library co-operation (in which the British Medical Association takes part) whereby all persons requiring books for any serious purpose are able to obtain them through their local public, university, or other library. The country is divided into a series of regional library systems; each system covering a group of neighbouring counties, and each having a regional bureau at which a union catalogue of the non-fiction books in nearly all the libraries in the area has been, or is being, compiled. The keystone of the national system is the National Central Library, which, in addition to being itself a great lending library, is the national centre for the inter-lending of books between one library and another. The system has become so efficient that practically any kind of serious literature can now be obtained on loan. The service is available to every branch of the community, from persons requiring information on the humblest everyday matters to research workers needing highly specialized and technical literature. In time of war the national library service will not only continue to be of the utmost importance to those who need books for general purposes, but it will also be of greatly increased value to Government Departments, organizations, and persons needing special literature in connexion with work of national importance. The National Central Library will naturally give priority to the latter service, as it is recognized that in tracing material for persons doing research on all forms of armaments, chemicals, foodstuffs, medicine, and so on, the Library will be filling a gap the existence of which was so serious a drawback during the last war. The organization of the National Central Library, with its great union catalogues and other unique bibliographical material, and the access it has to over twenty-one million books in other libraries in the British Isles, places it in an exceptional position to give service in time of war. Owing to the risk of the destruction of property at the headquarters of the National Central Library in London, all the union catalogues, as well as all other irreplaceable or scarce bibliographical material, have been removed to Bourne Lodge, Bourne End, Hemel Hempstead, Herts. The non-bibliographical books are remaining at the London headquarters in Malet Place, W.C.1.

Correspondence

Doctor and Patient in War Time

Sir,—As a surgeon my only reason for taking part in this correspondence is that the neuroses in war time are less likely to be solely the concern of the physician than they often are in times of peace. The war casualty is in fact more likely to have wounds of the spirit in addition to those of the flesh than is his peace-time counterpart. Should war actually involve the civilian population of this country then this combination of injuries will certainly increase rapidly. Already war neuroses can be detected in patients attending surgical (and other) out-patient departments. Some of the arguments put forward by Dr. Geoffrey Evans in his letter in the *Journal* of October 7 (p. 742) strike me as being so fallacious as to call for comment, and also by implication to imperil the fundamental relationship between patient and doctor. Under war conditions a free choice of doctor is no longer possible, either in the Emergency Medical Service or in the Services, and this fact is an additional argument for maintaining an important relationship unimpaired.

Dr. Geoffrey Evans says in connexion with the doctor's attitude to his patients that "we must sedulously refuse every thought of fear, regret, resentment, and the like, because these thoughts arouse emotions that have a weakening effect." Is this thorough-going self-purgation possible, biological, or wise? Reason may overcome fear, etc., but I doubt if this complete suppression of emotions can be carried out without our becoming medical automata towards our patients. Slogans have a habit of coming home to roost. On all sides we are told, "Your courage, Your cheerfulness, Your resolution, will bring us victory." This may be true, but it leaves unanswered the question whether the victory is to be of force, of reason, or of the spirit. At the present time I am (with hundreds of my colleagues) haunted by the fear of my inability to pay my rent, rates, taxes, etc.; I am filled with regret at many of the actions of the Ministry of Health; and I burn with resentment at the treatment meted out to some of my friends in the present emergency, treatment which would hardly be justified even under a dictatorship. But I do not as yet feel weakened by the emotions which have been aroused, and as far as I am aware neither my relationship to my patients, nor my patients themselves, nor my surgical ability, has been adversely affected. Whether I can control these emotions for the three years envisaged by the Government remains to be seen.

I cannot believe either that it is necessary or advisable to purge ourselves so thoroughly in order to help war-worn patients. The best that we give our patients is usually given unconsciously, and I doubt if we shall improve matters by a course of auto-suggestion. I know I shall not be a good doctor unless I can keep a credit balance from which to give the patient the help he needs. And I shall feel far stronger in this respect if I have not attempted to dispose of my emotions by repression.

What is this "good stuff" which Dr. Geoffrey Evans advises us to collect to give our patients? Is it a totalitarian attitude of mind, is it a sort of psychological salesmanship, or is it almost propaganda? The "good stuff" hardly seems to be "the stuff to give the troops," whether military or civil.

What of these colourless questions? No intelligent doctor should allow his feelings strongly to colour his words or questions, but need the questions be as colourless as Dr. Evans implies? Such questions will suggest no real interest, and they will be as featureless and flat as the phrases of a French exercise book. Self-purged medical purists will sterilize the fundamental human relationship between patient and doctor, and the patient at least will not be helped. Reactions may tend to be more exaggerated and more primitive in war, but I cannot believe that our response to these phenomena should be an exaggerated impersonal attitude.

Confidence is the basis of the relationship between patient and doctor, and this alone will enable the patient to express himself freely. This confidence will not be helped by too impersonal an attitude on our part or by the use of language purified of all emotional content. The patient comes to us just because he has a *complaint* and because he knows that up to a point we shall be *sorry* for him. The relationship, being one of real dependence, is one which necessarily holds some emotional content. Unless we have some capacity to be sorry for our patients and to indicate that our interest is not merely academic, we shall certainly not be good individual doctors. Surely in dealing with neuroses the doctor will do best who remains an individual understanding being, and not one who has (or apparently has) purged his being of emotional possibilities.

Certainly we should choose our words wisely and weigh them carefully. But it is not necessary to go to the realms of colourlessness to avoid distressing our patients, and by so doing we may embarrass them.—I am, etc.,

St. Mary's Hospital, London, W.2, Oct. 12. REGINALD T. PAYNE.

Psychiatric Casualties of War

SIR,—I read with interest Dr. George Pegge's article on psychiatric casualties of the first days of war (*Journal*, October 14, p. 764). I cannot, however, entirely agree with his conclusion that "cases in which neurosis was established before the outbreak of war are, so far, in many instances, quite unaffected by war strain."

Among my out-patients at the Tower House Psychotherapeutic Clinic, Leicester, the effect of the stress during the first days of war seemed to divide them into three categories.

1. Those who, like Dr. Pegge's cases, were not appreciably affected by the war. These, however, were in the minority, and were the more chronic neurotics who were not responding well to treatment or who showed mild psychotic features. Delinquency and child-guidance cases also were unaffected.

2. Those who improved considerably and unexpectedly. The extra calls upon them seemed to inspire a new purpose in living. They became busy in "blacking-out," etc., and have taken on some voluntary work of national importance, and in fresh activity have become free from symptoms. It is, of course, too soon to say whether they will be able to keep well.

3. Those whose treatment was progressing satisfactorily but have shown a marked relapse which, apart from the outbreak of war, would have been unlikely. These were mainly anxiety states. Some have shown an acute anxiety reaction, with exaggerated fears of danger. They are quite unamenable to reassurances, and patriotic posters such as "Your Courage, Your Cheerfulness, Your Resolution . . .," etc., are almost sufficient to precipitate an anxiety attack whenever seen. These are just the qualities they have lost. Their treatment has been so far by no means easy. In fact their superficial war anxieties seem to form a definite bar, or defence reaction, against the deeper psychotherapeutic treatment which previously was satisfactory. In others there has been an extreme irritability with an aggressive reaction towards their relatives. These are responding well and are able to continue the improvement previously being made. There must be many patients of this third group, responding well to various forms of general or specialized psychological treatment, who whenever danger threatens are likely to add to the difficulties of practitioners and first-aid posts.—I am, etc.,

W. H. WHILES, M.R.C.S., L.R.C.P., D.P.M.
Leicester, Oct. 18.

Chemical Warfare and the Doctor

SIR,—In his valuable article on this subject in your issue of October 14 (p. 778) Colonel E. M. Cowell advises the head-down tilt in cases of pulmonary oedema after phosgene gas. Also he says, "Treat all such lung casualties as stretcher cases, and after admission keep them quiet in bed." Both these recommendations can be carried out by a cheap and simple tilting bed which I have recently introduced (made by Siddall and Hilton, Sowerby Bridge, Yorkshire). For this bed can be tilted and clamped at any angle—head-up or head-down—and I am told it should be useful for draining gas casualties, besides its many other medical and surgical uses.[1]

Colonel Cowell proceeds: "For both HCN and H_2S prolonged artificial respiration with administration of O_2 and CO_2 is indicated. In these cases some form of artificial respiration by apparatus, such as an 'iron lung,' Eve-Riley rocking stretcher, or the Tor tilter, may save life." May I add that the above tilting bed is also able to produce artificial respiration by my 1932 rocking method (a dozen rocks a minute). A rockable bed has the advantages of warmth and comfort for hospital cases, and it can also be used as a flat hospital bed.

Colonel Cowell also—for phosgene cases—advises that nurses should be instructed how to give oxygen (average 5 litres per minute) with tents or masks. This year I have designed for nurses a simple "ward flowmeter" with a large bobbin weighted by a chain. This cannot be knocked over, and the nurse can read it from the other side of the ward. It is strongly made by Coxeter and Son, Morden Road Factory, London, S.W.19.

Here, then, are three more ways in which these gas cases may be helped.—I am, etc.,

Hull, Oct. 14. FRANK C. EVE, M.D., F.R.C.P.

Eye Ointment for Gas Poisoning

SIR,—In view of the possibility of the Germans using gas it is necessary that every R.A.M.C. officer should know what to do with regard to eye burns. During the last war the great majority of such cases were not treated until the soldiers had got beyond the casualty clearing stations. Mere lavage is not sufficient. Lavage with an alkaline lotion such as sodium bicarbonate 5 grains to the ounce, or indeed simple saline, helps to clear the conjunctival sac, but may I suggest that the following ointment be at once instilled for the first twenty-four hours:

Tube A. ℞ Sod. bicarb. .. .. .. 3 per cent.
Aqua dest. } āā 10 per cent.
Adip. lan. anhydr. }
Paraffin molle alb. .. ad 100 per cent.
Ft. ung. Tube.
Sig. Alkaline eye salve for gas poisoning.
First twenty-four hours.

The second twenty-four hours the following:

Tube B. ℞ Ung. ac. boracis .. .. 10 per cent.
Sig. Ophthalmic ointment. Tube.
Second twenty-four hours.

Indeed, Tube B can be continued indefinitely. These tubes are made up by Messrs. Allen and Hanburys according to my instructions.

The patient pulls the lower lid down, lays a worm-like piece of the ointment along the lower fornix, then looks down and closes his eye. Thus the upper lid imprisons the ointment.

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[1] *Lancet*, March 11, 1939.

This method is much simpler than the use of a glass rod, and the ointment is not squeezed out between the lids. The eyes should be kept bandaged.

I give this prescription to all soldiers and officers wherever possible, and I would strongly recommend all medical men to do the same.—I am, etc.,

London, W.1, Oct. 19. R. Lindsay Rea.

Work of the L.C.C.

Sir,—I should like to thank you for the references you made in your issue of October 14 (p. 775) to the work of our retiring and much esteemed medical officer of health, Sir Frederick Menzies. Anyone who listened to the debate in the London County Council on October 17 must have realized that everything which you said about his work for London was fully confirmed by those who have been in the closest contact with him.

I must, however, draw attention to certain words—not about Sir Frederick—in your article which I am sure will give rise to a false impression. You refer to "the virtual disappearance for the duration of the war of the L.C.C. public health department and the hospital services as a unit organization." Surely a public health department is just as important, if not more so, in time of war as in that of peace. It would be a sad commentary on our much-vaunted public health work if, at a time when the life of the community is at stake, we relaxed our efforts, in the smallest degree, to preserve the health of every man, woman, and child. With regard to the hospital service, it is true that the Minister of Health directs what use shall be made of hospitals, but the Minister has placed upon the Council the responsibility for the administration and management of all the L.C.C. hospitals (Circular 1874). Further, one has only to mention the Council's responsibility for the civilian sick, the maternity service, the treatment of venereal diseases and tuberculosis, and for general public health to realize the extent of the work still being done at County Hall.

The impression, therefore, that the public health department has virtually disappeared is inaccurate.—I am, etc.,

Somerville Hastings.
Chairman of the Hospitals and Medical Services Committee.

The County Hall, London, S.E.1,
Oct. 17.

Hospital Posts and the E.M.S.

Sir,—Professor L. J. Witts's letter in your issue of October 21 (p. 825) illustrates the widespread confusion which exists as to the intentions of the Ministry of Health regarding the junior officers of the Emergency Medical Service. His statement that "most of our hospital appointments have been indefinitely prolonged by the outbreak of war" is presumably based on the "contacts" guaranteeing a minimum of one year's service which were sent on August 31 to housemen then holding appointments at many of the London and provincial hospitals. Although no official statement to this effect has been made, I understand that these "contracts" (which are not, in fact, legally binding documents) were sent out in error, the original intention having been to offer only three months' guaranteed service. Since then the Ministry has made two attempts to amend its mistake. The first, an invitation on the part of Group Officers to the housemen concerned to resign their "contracts" on the date on which their original appointment would have terminated, has apparently been applied to only a few of the London sectors. The second, a clumsy attempt to cancel the "contracts" altogether, was repudiated semi-officially almost as soon as it was made. No further official announcement has been made, but it appears likely that the Ministry does not intend to allow present housemen to hold their appointments beyond the original term and that from then onwards appointments will be made for three or six months only, at a salary of £200 per annum plus maintenance. Since it is also likely that candidates for the Services will not be accepted unless they have held a hospital appointment, Professor Witts's ideal of compulsory hospital appointments seems likely to obtain some degree of realization.

There is, however, another aspect of the organization which seems to have received less attention than it deserves. In normal circumstances a selected minority of housemen, at the end of their term of office, go on to obtain higher qualifications and, to take up more responsible hospital appointments, as registrars, R.S.O.s, R.M.O.s, etc., in order to fit themselves for more specialized work as surgeons, consultants, and so on. Of such appointments Professor Witts's complaint that "the normal turnover . . . has ceased" is true, for their holders at the outbreak of war have almost all received long-term contracts which the Ministry of Health does not appear to wish to repudiate. It seems to be assumed that all present and future housemen, for the duration of the war, will join the Services the moment their house appointments are ended. This is particularly hard on some of the present housemen who, after a thorough peace-time training, have been working for perhaps two years or more since qualification with a view to taking the F.R.C.S. or the M.R.C.P. or some other advanced degree in the next few months, and obtaining the additional experience which a more responsible or more specialized hospital appointment can afford. They are now faced, at the end of their present appointment, with the alternatives of remaining unemployed while they attempt to get the higher qualifications without additional experience or of immediately joining the Services, where their opportunities for completing their postgraduate training will be, to say the least, limited. If the demand for newly qualified medical personnel by the Services develops as expected, their war-time successors will have no choice.

But surely there will also be a demand by the Services for more experienced men—for surgical and medical specialists of all sorts—which will have to be satisfied. There may be a few of the present junior officers in the Services who will be lucky enough to get the chance to fit themselves during the next few months to fill such posts. But the difficulties and varied requirements of military medical organization are such that not only will there be no assurance that these officers are the most suitable for such training but also that the demand will exceed the supply from this source and will have to be satisfied, in part at least, at the expense of the civilian medical services. These services themselves, as they expand owing to the increasing influx of civilian and, perhaps, military casualties, are likely to need more specialists for their own purposes, quite apart from the gaps made by military demands, deaths, and retirements. There will thus be an urgent need for men with more experience and qualification than can be got in thirty months' clinical study and six months' house appointment.

Under the emergency organization of the E.M.S., set up so hurriedly at the beginning of September, some of the more senior housemen are already, in fact if not in name, doing the work of registrars and chief assistants, while senior students are doing the work of housemen. It should therefore be possible to find room in the E.M.S. for an intermediate grade of medical officer, to which the more promising housemen can be promoted at the end of their six-months appointment, so as to give them more responsible work, still under some supervision, and the opportunity for higher study and qualification before they go to the Services or, if needed, to higher posts in the E.M.S. This need not reduce the number of house appointments available for the newly qualified, and it will help to ensure that the standard of British medicine is not lowered for the future by a failure to give young talent the opportunity to fulfil its promise.

For personal reasons which will be readily understood I subscribe myself

London, Oct. 22. Houseman.

Medical Education in War

Sir,—The question of medical education in its relation to the Emergency Medical Service is being discussed in the medical journals by teachers, students, and editors, and, in the case of the last, reference has on more than one occasion been made to the "twelve teaching hospitals" in London.

It is natural that the thirteenth school should be a little jealous of its position, and I hope that such references will not lead your readers to infer that the West London Hospital Medical School has ceased to exist. On the contrary, it is, I believe, the only medical school in London where all the students are still working in their own hospital. Twenty-two women and six men are still following a curriculum which is as complete as it can be in view of the scattering of the teaching staff in Sector VII of the E.M.S. and the reservation of many beds for air-raid casualties. The general and special branches of medicine and surgery (including public health and obstetrics) are all still being taught, and the reduction of clinical material is to some extent offset by the more rapid turnover resulting from the early evacuation of cases.

Our most serious problem is pathology. Our pathologists and technicians have left us, and we have had to make temporary arrangements elsewhere for the teaching of this subject to the new students who have entered this term. Other schools, I hear, are making efforts to improvise pathological teaching in hopelessly unsuitable premises. Under such conditions practical work in the ordinary sense will be impossible and its omission will be a serious loss to the curriculum. At the West London we are hoping that it may be possible to resume teaching in our own well-equipped laboratories and class-rooms in the New Year. But this cannot be done without the help of both the pathologists and the technicians who have been called up in the Emergency Medical Service.

The organization of the E.M.S. appears to have been conceived and executed without any thought for the needs of medical education. This may have been unavoidable, as those responsible were doubtless advised that nothing would be left of London but smoking ruins after a few weeks of war. It is no use criticizing the authorities for what has happened in the past, however much each one of us may feel that he could have done it better himself. But for the future it is very much to be hoped that the Minister of Health will realize the urgency of continuing medical education with as little lowering of the usual standards as possible. To ensure this it will be necessary to make available the pathological teachers and technicians who are at present working in the sectors under conditions which make teaching difficult, if not impossible. Unless and until air hostilities prevent it, it would surely be wise, wherever possible, for pathological teaching to be carried out in the usual class-rooms, rather than in the badly equipped accommodation, such as can only be provided by the public assistance and other hospitals which are now being used for potential casualties.—I am, etc.,

MAURICE SHAW,
Dean,
Oct. 23. West London Hospital Medical School.

SIR,—May we draw the attention of your readers to a matter which we feel must be of great concern to members of the medical profession, and which is of immediate importance to us as medical students?

The Emergency Medical Scheme came into force six weeks ago, and since then there has been a widespread dislocation in the teaching arrangements of all the London medical schools; at the time of writing there is no indication of when teaching will be resumed. Under the present system, students in their clinical years are distributed among the casualty clearing stations in their respective sectors, where they are attached to blood transfusion and surgical teams. In some hospitals the staff have voluntarily instituted teaching, which, while often of a high standard, is not officially recognized. In others there is none, and in few is there adequate clinical material. Under war conditions, when the need for doctors is certain to become greater, we cannot view this lack of organized teaching with anything but dismay, and we are earnestly hoping that some plan for organized medical education will very soon appear. Anticipating such a plan, we venture to suggest the following proposals:

1. *Pre-clinical Training.*—All efforts should be made to ensure that the numbers of students entering on training should not be reduced.

2. *Teaching.*—That the standard of education should suffer as little as possible. Teaching centres should be set up throughout each sector to be attended by all students in neighbouring casualty clearing stations, and vital clinical appointments should be ensured by rotation of students to hospitals where there is appropriate clinical material. While each student should have his emergency station in the E.M.S., the short periods during which his education is interrupted should not count as part of his course.

3. *Economic Conditions.*—Steps should be taken to see that students should not be compelled to give up their careers because of economic hardships imposed by war conditions. Hardship committees to deal with such cases might be set up, including responsible student representatives with first-hand knowledge of students' difficulties.

4. *Examinations.*—The standard of examinations should not be lowered. If it is temporarily necessary to qualify men in a shorter time than normal, this should be achieved by a shorter and more intense period of training, rather than by merely curtailing the present clinical course and making the examination easier to pass. We consider that under the present circumstances the organization of medical training could be more effectively carried out by some central body, such as the University of London, as opposed to the isolated efforts of individual medical schools. In this case the resources of all the London and surrounding hospitals could be pooled and made available for all.

While we fully appreciate the magnitude of the task of reorganizing medical teaching, and the great efforts that are being made by those responsible for it, it is in the interest of both the general public and the medical profession that this should be accomplished as rapidly as possible. We hope that the few suggestions we have made will be of assistance in meeting this urgent situation.—We are, etc.,

A GROUP OF LONDON MEDICAL STUDENTS.
28, Great Percy Street, W.C.1, October 16.

X-ray Examination of Militiamen

SIR,—With reference to the correspondence about the *x*-ray examination of militiamen, the best and cheapest method is, I consider, the one introduced in the U.S.A. by Powers *X*-ray Products Inc., which I had the opportunity of seeing over there. This is well-established and recognized by tuberculosis officers and leading chest physicians in the States.

By this method one *x*-ray machine can take films of up to 1,000 men a day (two to three per minute). The personnel required is one radiologist, two radiographers, and a secretary. The films used are paper films in rolls of fifty or a hundred exposures. A viewing box with direct instead of transmitted light is needed. According to American authorities the cost of examinations is thus reduced by about 50 per cent.

The importance of the *x*-ray examination of all H.M. Forces must be emphasized. First, it would reduce the number of pensions payable by the early detection of cases of tuberculosis; and, secondly, the spread of the infection to healthy people would be avoided.—I am, etc.,

London, N.6, Oct. 9. LEO RAU.

Problems of Evacuation

SIR,—We hear a great deal of the difficulties arising from the evacuation of children, and the time now seems ripe for spreading knowledge of those measures which can be taken to deal with such difficulties, and which are already being so successfully practised in Huntingdonshire.

Here, where some hundreds of children have been billeted, at least seventy have presented serious problems, the chief of these being bed-wetting and unmanageableness. I have seen at first hand the work that is being done for the "Women's Voluntary Service" by an experienced child guidance worker in assisting the children to settle down to their new life and in mitigating the hardships of the foster parents. Much has already been done by reshuffling billets. For instance, foster homes that cannot tolerate bed-wetting can easily deal with stealing, whilst others who cannot put up with a child unable to use knife and fork do not mind a great noise and mess in the house. But this has been but one part of the child guidance worker's duties. The second has been to establish and run centres for the treatment of those children who are really anxious and psychologically ill. In her car the worker carries around play therapy apparatus from one centre to another. Thirdly, she has organized a hostel for about twenty of the completely "unbilletable" and difficult children, and I have seen them as a happy noisy crowd under the supervision of a thoroughly understanding teacher, nurse, and housekeeper. Some children cease to be problems when placed in the care of more experienced people, whilst others require—and are receiving—individual psychological treatment. The success of the work can be gauged from the fact that among sixteen children sent to the hostel for bed-wetting there are now only two wet beds per night.

It is to be hoped that other areas will follow this example, since individual difficulties of this kind are seriously interfering with the success of evacuation schemes—schemes which have cost the country a great deal of trouble and expense.—I am, etc.,

Southampton, Oct. 19. S. L. Yates.

Sir,—In reference to your admiration for the "successful exodus" and the adverse comments of your correspondents in reference to the L.C.C. and the education authority, I write to point out that criticism should be directed chiefly to the Ministry of Health. My reasons are these:

Last autumn, after a wireless broadcast about the Ministry's scheme for evacuation, I was visited by a volunteer representing the local health authority inquiring about the number of rooms in my house, etc. I told her the scheme as announced on the wireless struck me as excellent for the distribution of vermin throughout the countryside, and asked her what methods the local authority had in view to safeguard the neighbourhood. She replied she had never thought of it, did not think anyone had, and did not believe the danger existed because (she argued) the children would be under the care of teachers and under medical inspection. I told her I could not believe the health services could have so far improved conditions since I retired from practice as to have eliminated the danger, and my experience had taught me that teachers, with their attention concentrated on teaching, very often failed to observe obvious vermin, let alone the eggs of vermin. She promised to report my warning to the local authority.

At the end of July, or early half of August last, I called on the local officer in charge of the scheme. He informed me that my warning had been noted in a book, but he was satisfied there was no danger because the health authority of the evacuating area had had the matter in hand for months. I repeated I thought it a matter to be thought of. When evacuees arrived I was informed many were verminous. One girl volunteer told me she was struck by sores on some children she had to carry and dump on a hostess. This would have been bad enough. But, further, there were women among them who soiled their beds with urine and faeces.

I submit it would have been a simple thing for the Ministry of Health to ascertain from each evacuating area the approximate number of their slum population, and have instructed each corresponding reception area to be prepared to receive that number of people not fit to be billeted in any home. They should have given advice as to how best to tackle the problem instead of leading the local authority to suppose there was no danger because the health authority of the evacuating area had the matter in hand for months. How could small towns and villages be prepared without receiving such information and advice? As a member of the medical profession I am deeply humiliated by the lack of foresight and sympathy displayed by the Ministry of Health, which is the responsible authority in the matter under consideration.—I am, etc.,

Bangor, Oct. 18. Erie Evans.

Intussusception from Meckel's Diverticulum

Sir,—The three notes on intussusception from a Meckel's diverticulum published in the *Journal* of March 10 and 17 and April 21 emphasize the rarity and the interest of this condition. The following describes the treatment of such a case by a two-stage operation for a moribund patient.

A boy aged 1½ years was admitted to hospital cold, almost pulseless, and dehydrated. He presented the classical symptoms and signs of an intussusception with an abdominal tumour and the passage of blood per rectum. After restoratives, the operation was undertaken and the intussusception was confirmed but only reduced partially. The apex was found to be a Meckel's diverticulum which could not be unfolded owing to the gross oedema about it. However, enough of the invagination had been undone to permit the normal passage of the bowel contents; besides which the child's state was so parlous that extension of the operation to excise the protrusion was clearly prohibited. The diverticulum was anchored by a single catgut suture to the lower end of the abdominal incision and the wound was closed. A blood transfusion and intravenous saline were given and the child rallied.

Three weeks later the wound was reopened and the diverticulum was readily delivered. The oedema had subsided, the invagination was still present and still irreducible. It was excised and an uneventful recovery ensued.—I am, etc.,

Oct. 13. Harold Dodd.

Sir,—In your issue of October 7 (p. 722) Mr. R. Stuppel describes an interesting case of irreducible intussusception due to a Meckel's diverticulum, and goes on to discuss the principles of treatment of these cases. He concludes that it is unjustifiable to leave an unreduced intussusception in the abdomen after performing a short circuit, and states that "to excise the tumour . . . cannot materially add to the shock of the operation." This conclusion, I believe, requires some qualification. It has been shown that the mortality rate of resection for irreducible intussusception in infants is very high, and, in fact, approaches 100 per cent.

In my 1935 report (*Lancet*, 2, 992) of three cases, referred to by Mr. Stuppel, the successful treatment by short-circuiting anastomosis was based on the facts that the cause of death in the majority of untreated cases is intestinal obstruction and that peritonitis due to gangrene of the intussusceptum is a rare complication, and it was suggested that this treatment gave the best chance of survival. Although, of course, the risk of peritonitis cannot be altogether excluded, this risk is much less than that of resection in children under 3 years of age. As older children are better able than infants to withstand major abdominal operations, the slight risk of peritonitis when the intussusception is left *in situ* is, perhaps, an argument in favour of resection in their case, but it is justifiable to take this risk when dealing with very young children in view of the high mortality following resection. The contention that an intestinal resection following an anastomosis does not materially add to the shock of the operation cannot be accepted.

By a coincidence, I have during this past week operated on an irreducible intussusception in a child of 2½ years; a short circuit without resection was performed, and up to the present time the progress has been satisfactory.—I am, etc.,

Reading, Oct. 16. A. Elliot Smith.

Sir,—I wish to report another case of acute intussusception caused by a Meckel's diverticulum following that of Mr. R. Stuppel's in your issue of October 7 (p. 722). Although the condition is apparently not uncommon, it is insufficiently reported, especially in view of its high mortality and the varied opinion as to its treatment. This case is similar to Mr. Stuppel's and gives a further method of treatment where a primary resection is inadvisable.

In October, 1938, a girl aged 4 was admitted as an "emergency" with an abdominal tumour. She had been ill with some abdominal pain for four days, and acute pain associated with vomiting for twenty-four hours, which had ceased for the last few hours. There-had never been any previous attacks so far as could be made out. There had been no passage of blood or mucus per rectum, and the bowels had been open the day before.

On examination she was a very pale, dehydrated child in no obvious pain. Temperature was 98° F. and her pulse rate 120. There was very little abdominal distension apart from an obvious tumour in the umbilical region about 2½ by 4 inches and freely mobile. It did not readily suggest an intussusception from its shape, but this was considered to be the likely diagnosis. There was nothing to be felt per rectum.

Operation was performed under gas-and-oxygen anaesthesia. Subumbilical incision was made and the tumour delivered. It consisted of the last part of the ileum and was confined to it. In spite of trying various methods it could not be reduced, and there was great risk of splitting the ensheathing layer, which was congested and rather distended with its contents but otherwise healthy. A side-to-side anastomosis was made between the afferent and efferent loops a short distance from the tumour. It was not justifiable to resect the tumour owing to the grave condition of the child, so the abdomen was closed with the tumour outside the abdominal wall, as in a Mikulicz operation. Intravenous saline was given, and the post-operative course never really gave rise to any anxiety. The bowels were open the following day and for the rest of her time in hospital. Four days later the tumour was removed with the diathermy knife under gas and oxygen. Although there was very little leakage from the ileostomy it was sufficient to produce some digestive appearances of the wound margin. A further operation was performed to close the fistula, which was done three weeks after the original operation by a simple suture, the peritoneal cavity not being opened. From then on there was an uninterrupted recovery and there were no ill effects when seen recently.

The specimen removed was similar to the one reported by Mr. Stuppel with an equally long gangrenous, perforated, and invaginated Meckel's diverticulum three inches long. The whole tumour had been twisted on itself, thus losing its sausage shape.

Although it may be possible to resect the intestine, preceded by a preliminary lateral anastomosis as outlined by Mr. Stuppel, there will be some cases in which this is not always considered advisable, as it appeared in the case above. The bitter experiences of Mr. Stuppel's case showed that the returning of the mass to the abdominal cavity is unjustifiable, although Mr. Elliot Smith's cases were successful. Viability of the ensheathing layer gives no indication as to the viability of the entering and returning layers. Also, suturing the layers together or hoping for a spontaneous cure cannot be relied on and does not seem to be devoid of a definite risk.

In view of the high mortality of resection of the intestine in children it would be interesting to hear the views of others who have tried resection by stages.—I am, etc.,

King's Lynn, Oct. 21. John O. Harrison.

Varicosities of Veins

Sir,—Professor Lambert Rogers (*Journal*, August 19, p. 383) in his paper on the treatment of varicosities of veins stressed the importance of tying the saphenous vein above its highest tributary. In your issue of September 9 (p. 581) Dr. W. D. Park suggests that it is easier and equally effective to ligature the vein above the highest dilated part. Personally, I am in entire agreement with Professor Rogers, and my own experience of combined ligature and injection in 329 cases has convinced me that the method advocated by Dr. Park is at least as difficult, and is followed by a large number of late recurrences.

In 1932, disappointed with the late results of injection only in advanced cases of varicose veins, I began to use the operation which Dr. Park now suggests. In 160 cases I tied the vein just above the highest dilated part and at the same time injected sodium morrhuate distally. The immediate results were excellent, and I agree with Dr. Park that many cases require no more injections or apparently less than if the vein is tied at the saphenous opening. It was only after a year or so that recurrences from this operation began to appear. So far eighteen, or 20 per cent., of these cases have developed gross recurrences; the shortest period before recurrence was six months, the longest about three years.

I do not think there can be any argument that on anatomical and physiological grounds ligature at the saphenous opening is the more radical operation. The operation at the saphenous opening is also, in my opinion, an easier one than the distal ligature because we have a definite fixed surface marking for the saphenous opening, while it is remarkable how often it is difficult to find the lower vein in the leg, even when its position has been carefully marked on the skin beforehand. Many surgeons consider that the proximal ligation of the saphenous vein close to the femoral trunk is fraught with danger. Personally, I consider that this risk has been grossly exaggerated. I have never seen any complications which could be attributed to high ligation in 169 cases, most of which were allowed to go home on the day of the operation, and I know of many colleagues who have had as fortunate an experience.

I have been very conscious of the fact that if sodium morrhuate has been injected after saphenous-femoral ligation the sclerosing effect is very limited. It appeared to me that this difficulty could only be overcome by injecting large doses of the sclerosing fluid and massaging it down the vein or by passing a long needle or catheter down the vein and injecting as it is being withdrawn. Sodium morrhuate, unfortunately, cannot be used in large doses, and, moreover, it is my experience that it produces more perivenitis and a more massive clot than the other sclerosing fluids. For the last five years I have used sodium salicylate in 30 per cent. solution and have found the results to be very satisfactory; it can be used with safety in doses of 10 or more c.cm. and produces the minimum amount of perivenitis and thickening. Unfortunately sodium salicylate produces a severe cramp-like pain in the leg, but this does not last for more than a minute or two.

I find that the best method of spreading the sclerosing fluid over the largest area of the varicosities is to pass a ureteric catheter down the vein as far as it will go and then inject the fluid while the catheter is slowly withdrawn. As the catheter is passed down the vein it will be felt to catch in the valves, but with a little manipulation it will slip on.—I am, etc.,

Liverpool, October 15. J. B. Oldham.

Melted Wax in Therapeutics

Sir,—Melted wax has been used for some years for the purpose of applying heat to rheumatic joints. For the last four years some of us at the local hospital and in our practices have extended its use to various inflammatory conditions such as local sepsis, pleurisy, etc. The immediate local treatment of such conditions may be summarized as: first, immobilization to prevent the spread of infection, and, secondly, the application of heat to increase blood supply and mobilize body defences to the site affected. In my opinion melted wax is by far the most efficient way of applying heat that we possess. The inflamed hand or finger which leaves the surgeon uncertain as to when and where to incise will often be induced to localize within twenty-four or forty-eight hours into a large pus blister which can be dealt with without anaesthesia.

In the treatment of inflammation it is not sufficient to apply the wax for an hour at a time. It is best to put it on in layers in the usual way with a brush and incorporate some cotton-wool in the last layer. Such an application need only be changed every twelve hours, and is light and comforting to the patient. Hard paraffin wax can be obtained from the chemist at about 8d. a pound with a melting-point varying from 120° to 140° F. As it can be used repeatedly the cost of each application is almost negligible.—I am, etc.,

Ashford, Kent, Oct. 10. E. Scott, M.D.

Cisternal or Lumbar Puncture.—Weidner favours lumbar puncture, having had two cases in which death followed cisternal puncture; in one case death was caused by a subarachnoid haemorrhage. After lumbar puncture he injects physiological saline into the spinal canal (four-fifths of the amount of cerebrospinal fluid withdrawn) in order to restore the intraspinal pressure to its previous level and to prevent the headache which commonly follows lumbar puncture.—K. Weidner.—*Klin. Wschr.*, June 30, 1938, **28**, 911.

Obituary

EDWARD PALMER POULTON, D.M., F.R.C.P.

Senior Physician to Guy's Hospital

Edward Palmer Poulton, who died on October 18, was the elder son of Sir Edward Poulton, F.R.S., Hope Professor of Zoology at the University of Oxford from 1893 to 1933. He was born at Oxford in 1883 and was educated at Rugby, where he was a science exhibitioner, and Balliol, where he was a science scholar. He obtained a second class in the final honour school of chemistry in 1905. He stayed two additional years in Oxford before going to Guy's in order to work for his first M.B., and there came under the influence of Haldane. This together with his early training in chemistry had a profound effect on his future career as a scientific physician. In 1911 he gained the Radcliffe Travelling Fellowship, and after finishing his house appointments at Guy's he went to Munich, where he worked under Fr. von Müller, the greatest German physician of the twentieth century. He returned to Guy's in 1912 as demonstrator of physiology, and the next year he was appointed medical registrar. In 1914 he was elected assistant physician and gained a Beit Memorial Research Fellowship. In 1918 he was elected Fellow of the Royal College of Physicians and delivered the Goulstonian Lecture on recent views on diabetes mellitus and on the significance of acidosis in disease. In 1921 he was awarded the Radcliffe Prize by the University of Oxford for original research, and in 1928 he was Oliver Sharpey Lecturer at the Royal College of Physicians. In 1926 he was elected physician to Guy's. In July of this year he became senior physician, and under normal conditions the hospital would have had the benefit of his services in this capacity for four years. But the war led to the dispersal of the staff, and students and Poulton joined the section which went to Pembury, near Tunbridge Wells, where he was taking a leading part in the clinical instruction of the students at the time of his untimely death.

Poulton was interested in many branches of medicine, but he always approached the study of disease from the point of view of a biochemist. Like Pavy sixty years earlier, he made Guy's a centre for research in diabetes, and he made many important contributions to our knowledge of the disease and to its treatment both before and after the discovery of insulin. He believed that the usual method of measuring the basal metabolism rate depended upon false principles, and he made elaborate chemical and mathematical studies with the object of putting the subject on a more accurate and scientific basis. He was an expert in dietetics and wrote a useful book on the dietetic treatment of diabetes and obesity with a large collection of recipes. Poulton's early work with Haldane had made him interested in the chemistry of respiration, and his most valuable contribution to practical medicine was in connexion with oxygen therapy. He was tireless in devising improved methods for its effective administration. He showed how oxygen, when given in sufficient concentration, was of enormous value in many conditions in which hitherto it had never been employed. His oxygen tent came into use in the majority of large hospitals, and he arranged for a service by which an apparatus could be sent with a skilled technician to a hospital or private house anywhere in the country. This work must have saved countless lives, and, though simpler methods of giving oxygen are now generally used instead of the tent, our knowledge of the need for high concentrations and of the many indications for oxygen therapy are largely the result of his unceasing investigations on the subject.

Poulton was a first-class hockey player in his student days, gaining his half-blue for Oxford in 1905 and 1906, but a succession of illnesses restricted his physical activity in later years. However, he never allowed this to interfere with his work at Guy's. He was a better biochemist than clinician, and his enjoyment of teaching did not always receive the appreciation it deserved. He was a regular attendant at meetings of the Royal Society of Medicine, the Association of British Physicians, and the Medical Research Club, and he was one of the few physicians who rarely missed a meeting of the Physiological Society. He received four grants for research from the British Medical Association, and was secretary of the Section of Medicine at Bradford in 1924, vice-president of the Section of Therapeutics at Edinburgh 1927, and vice-president of the Section of Medicine at Eastbourne in 1931.

After the death of Sir Frederick Taylor, Poulton was asked to edit the twelfth edition of his *Practice of Medicine*, and he was also responsible for the three further editions which have appeared since then. The book has deservedly retained its popularity among students, as Poulton put in an enormous amount of work to keep it completely up to date, but whereas in Taylor's time it was still possible for one man to write the whole of a book on medicine by himself Poulton wisely obtained the help of colleagues to look after such special subjects as dermatology and neurology. The dogmatic style of the earlier editions was in remarkable contrast with the character of Taylor's bedside teaching, but the later editions clearly showed Poulton's special interest in biochemistry and his original and often unorthodox views on treatment.

Everybody liked Poulton, and his death comes as a severe blow to the hospital he served so well. At the same time it removes an outstanding personality from the medical life of the country.

In 1911 Poulton married Elfrida, daughter of the late Charles Maclean of Glenearn. He had three sons, the eldest of whom is in his father's profession, and two daughters.

A. F. H.

[The photograph reproduced is by Elliott and Fry, Ltd.]

A. T. PITTS, D.S.O., M.R.C.S., L.D.S.

Our sympathies will be with our colleagues of the dental profession for the loss that they have sustained by the unexpected and early death of Mr. Arthur Thomas Pitts, who had done so much for the British Dental Association during the past years.

The abilities of Mr. Pitts were speedily recognized both by his teachers and his fellow students at the Middlesex Hospital. His was an ability which included not only the power to grasp the accumulated wisdom and experience of medical practice and teaching put before him in the laboratories, the lecture rooms, and in the hospital clinics as becometh a good student, but also the finer power of giving a clear expression to this knowledge. He could write. So that in his later student days he became the editor of the *Middlesex Hospital Journal*, and an exceptionally good editor he proved himself to be. This early work of his was as it were the signpost to his best and most valuable work for his professional colleagues. Soon after the end of the last war he became the scientific editor of the *British Dental Journal*, and his work in that field proved to be of a high order and of real service. The loss of these services of his will be felt by all members of his profession.

His attainments in the practice of dental surgery were recognized by his appointment as dental surgeon to the Royal Dental Hospital, and also to the Middlesex Hospital; and as examiner in dental surgery to the Royal College of Surgeons of England and to the University of Liverpool. His abilities in general medicine and in executive power were proved by his work in the last war. He served from 1914 to 1919 and reached the rank of lieutenant-colonel in 1917. He was O.C. of the 4th Cavalry Field Ambulance, B.E.F. For his services he was mentioned twice in dispatches and awarded the D.S.O. As a man he was of the gentlest and most kindly nature. He was always willing to help others. And he did these services in such fashion that the recipient of his aid also received the impression that he was conferring a favour upon Pitts by allowing him to give this kindly help. He was truly a gentle man.

N. Bishop Harman.

BEDFORD FENWICK, M.D.

Consulting Gynaecologist, Hospital for Women, Soho

Dr. Bedford Fenwick, who died at Cambridge Gate, Regent's Park, London, on October 14, was a member of a well-known medical family. His father, Samuel Fenwick, M.D., practised at North Shields and in Harley Street.

Born on March 2, 1855, Bedford Fenwick received his medical education at the London Hospital and at Newcastle-upon-Tyne, and graduated M.B. of the University of Durham in 1877, proceeding to the M.D. in 1880 and taking the M.R.C.P.Lond. in 1881. After postgraduate study in Leipzig, Berlin, and Paris, he settled in practice in London and was elected assistant physician to the City of London Hospital for Diseases of the Chest. Specializing later in gynaecology he was for many years a member of the visiting staff of the Hospital for Women, Soho, and Editor of the *British Gynaecological Journal*. Dr. Fenwick married in 1887 Ethel Gordon Manson on her retirement from the post of matron of St. Bartholomew's Hospital. He became trustee and treasurer of the British College of Nurses, one of the many institutions, national and international, founded and presided over by Mrs. Bedford Fenwick, and he took a warm interest in the *British Journal of Nursing*, of which she has long been editor. He edited the sixth edition of the *Student's Guide to Medical Diagnosis* in 1886 and wrote several books—*Nursing of Chest Diseases*, 1901; *Common Complaints of Women*, second edition, 1920; and *Uterine Fibroids and Pelvic Tumours*, third edition, 1920.

Mr. Thomas Morrell-Thomas, who died on October 9 at the age of 68, was educated at Aberystwyth College and Guy's Hospital, and graduated M.B., B.S.Lond., with first-class honours, in 1895. He took the M.S. soon afterwards and the M.D. and the F.R.C.S. in 1897. Having served as assistant demonstrator of anatomy and house-surgeon at Guy's Hospital, he joined his uncle, the late Sir Garrod Thomas, in Newport, Monmouthshire, and was elected to the surgical staff of the Royal Gwent Hospital. Mr. Morrell-Thomas combined the work of general practitioner and surgeon, and held many appointments, including those of visiting surgeon to the Monmouthshire and Newport Mental Hospitals, and consulting surgeon to the Welsh National Memorial Hospital, Newport. During the last war he held a commission as major R.A.M.C.(T.) on the *à la suite* staff of the 3rd Western General Hospital. He joined the British Medical Association in 1898, and was a past president of the Newport Medical Society.

Dr. Frank Allan Roberts, who died suddenly on October 9 at Houghton House, Brighouse, Yorks, aged 73, was the elder son of Samuel Drake Roberts of Rawfolds, Cleckheaton, and had his professional training at the Yorkshire College, Leeds. After taking the English Conjoint diplomas in 1891 he served as house-physician and resident medical officer at the General Infirmary at Leeds, and resident medical officer to the Leeds Public Dispensary. In 1894 he graduated M.D.Lond., and some years later settled in practice at Brighouse. For many years he was deputy medical superintendent of the Clifton Hospital, and he had been a member of the British Medical Association for nearly half a century.

We regret to announce the death of Dr. John Joseph Tisdall, which took place at Boughton Hall, Chester, on October 11, in his eightieth year. He studied medicine at Liverpool and Edinburgh, and qualified L.R.C.P., L.R.C.S.Ed. and L.M. in 1882. He joined the British Medical Association in 1896, and always took a keen interest in the affairs of his profession. For many years while in private practice, and later while superintendent of Tue Brook Villa Liverpool, he attended the Annual Representative Meetings; he was a representative of Liverpool in 1903, in 1914–17, in 1919, and in 1921. His son is Dr. Charles J. Tisdall, resident physician at Boughton Hall, Chester.

We have received the following further particulars of the career of Dr. Augustus Mayberry Whitestone, whose death was recorded in last week's *Journal*. He practised at Hollingbourne, Kent, and was medical officer to Hollingbourne Union for thirty-six years, when being knocked down by a motor cycle he was forced to retire. Returning to live among his old friends in 1936, in failing health, he received a warm welcome, owing to his cheery nature and constant kindliness. A friend who helped him with his work in 1924, when he was recovering from pneumonia, writes: "I have the happiest memories of that time, of his sweet nature and how he taught me to run a practice. I admired him and his robust outlook on life and on his work. In my own medical life I have often tried to deal with things in his way. It is in contacts like these that tradition in our profession is handed on, and I am fortunate that I was privileged to meet him in that way." Dr. Whitestone married in 1894 a daughter of the late Major-General Sir Frederic Goldsmid, and has one son, a colonel in the Royal Engineers, now serving at the front.

The death of Mr. Ernest Harding-Freeland took place within a month of his retirement from the post of medical officer of the Isle of Thanet Joint Isolation Hospital at Haine, which he had held for thirteen years. The son of a naval officer, Commander J. O. Freeland, he studied medicine at the Middlesex Hospital, and qualified M.R.C.S., L.R.C.P. in 1885. After holding a number of hospital posts, including those of house-surgeon at the Middlesex, surgical registrar at the Royal National Orthopaedic, and resident medical officer at the Royal Waterloo Hospital for Children and Women, he took the F.R.C.S. in 1897. During the war he served with the temporary rank of captain R.A.M.C., and afterwards practised at Herne Bay before moving to Haine, near Ramsgate. Mr. Harding-Freeland had been a member of the British Medical Association for forty years.

Aspiration Therapy of Tuberculous Cavities.—This is a preliminary communication, with a detailed case report, of a method of treatment that will probably excite much interest.—Aspiration Therapy of Tuberculous Pulmonary Cavities. V. Monaldi.—*Z. Tuberk.*, May, 1939, 82, Heft 5, 273.

Medico-Legal

PROCAINE OR PERCAINE?

A doctor desired to administer a local anaesthetic to a patient suffering from arthritis. He went to a firm of chemists and asked one of the dispensers for a drug. About midday the bottle arrived labelled: "Not to be taken. Sterile solution of percaine, 2 per cent. 50 c.cm. Poison." He read the label and opened the bottle, and referred to the manufacturer's catalogue, in which he found listed a 2 per cent. solution of percaine for use "exclusively in surface anaesthesia." He decided that it would serve his purpose, and injected about 12 c.cm. around the patient's shoulder. Within five minutes she said she felt faint; she then went into convulsions and died in about half an hour from heart failure and acute oedema of the lungs.

At the inquest before the Bournemouth coroner, held on October 5, the doctor said he had asked the dispenser for a 2 per cent. solution of procaine. He did not say what he wanted it for, and was not asked to sign the poisons book. He had thought that use for surface anaesthesia did not exclude subcutaneous injection. He produced a list which he had made as a personal memorandum for use that morning: it contained the name "procaine." It was quite usual, he said, to ask verbally for procaine; in a dilution under 10 per cent. it was not a First Schedule poison. (Poisons in the First Schedule to the Poisons Rules must be signed for by the purchaser in the poisons book or entered in the prescription book.) When he had gone to the chemists he had not known there was such a preparation as 2 per cent. percaine, though he had heard of the name. He knew that procaine was a normal local anaesthetic, and that percaine was more commonly used as a spinal anaesthetic, and that if he had asked for percaine he would have had to sign the poisons book. In cross-examination he said he did not know that percaine was at least ten times more toxic than procaine.

The dispenser, in evidence, said that the doctor asked for percaine, and that he himself entered in the day-book a sale of percaine as soon as the doctor left the shop. He did not know at the time that percaine was a First Schedule poison in weaker strength than 10 per cent., or that there was a considerable difference between 2 per cent. percaine and 2 per cent. procaine. A qualified pharmacist employed by the firm said that after the doctor left he and the dispenser discussed the amount of percaine crystals which should be put into the water for the solution. According to the maker's price list a 2 per cent. solution of percaine was a First Schedule poison, but at that time he did not think it was. Another pharmacist said he had also checked the quantity, and had not been fully aware that percaine was in the First Schedule. A medical representative of the manufacturers of percaine said it was a synthetic local anaesthetic with properties like those of cocaine, and might be injected into the tissues, but the 2 per cent. solution was not safe for injection. The proper concentration in this case would have been one-tenth of 1 per cent.; 2 per cent. procaine would have been suitable. The maximum safe dose for this patient would have been about 60 mg. of percaine, but the doctor had given 240 mg. The drug should not have been dispensed without a written order. A pathologist agreed that the drug was a proper one to administer, but the strength had been too great.

The coroner advised the jury that if they were in doubt whether the doctor had been guilty of criminal negligence they must give him the benefit of that doubt. He pointed to the frankness of the doctor's admission of his mistake. It was dangerous to give a verbal order for a drug, and the doctor, when he found that the chemist had sent him percaine, could easily have rung up to say that it was not what he had ordered. The jury returned a verdict of death from misadventure with a degree of negligence on the part of the chemist and the doctor, but not criminal negligence.

The Question of Negligence

The degree of negligence which a jury may regard as criminal has been dealt with very fully by the courts, particularly by the Lord Chief Justice in R. *v.* Bateman (1925). The carelessness has to be quite unusually bad, or aggravated in some unusual way, to amount to criminal negligence, and a verdict of criminal negligence against a doctor is a very rare thing. As the coroner remarked, the death was due to an unusual chain of misfortunes. Perhaps the most important factor was the similarity of the two names. Procaine is a scientific name for a local anaesthetic of low toxicity, and is mentioned in the *British Pharmacopoeia*. Percaine is a proprietary name applied by a well-known firm of drug manufacturers to a synthetic compound with properties similar to those of cocaine, one of the most powerful local anaesthetics obtainable. The evidence suggested that the doctor had not the vital distinction between the two names present to his mind, and the chemists did not realize they were dealing with such a dangerous substance, or indeed that it was a First Schedule poison. They were within the law in dispensing percaine on a doctor's verbal order if they made, as they did, a suitable entry in the prescription book. Procaine, though it may only be sold by a qualified pharmacist, may be sold to a lay purchaser without restriction or record. This accident might have been avoided if the doctor had written a prescription for the drug instead of relying on a request by word of mouth. Verbal prescription is probably harmless in the vast majority of cases, but an appreciable number of accidents can be directly traced to it.

STATUTORY PROTECTION OF MEDICAL OFFICERS

In order to protect public authorities from claims made against them a long time after the facts on which they are based occur, Parliament passed in 1893 the Public Authorities Protection Act. An action against an ordinary citizen may as a general rule be brought at any time within six years, but this Act limits the period for bringing an action against a public authority to six months. It applies to "any action . . . against any person or any act done in pursuance or execution or intended execution of any Act of Parliament or of any public duty or authority, or in respect of any alleged neglect or default in the execution of any such act, duty, or authority." A child was severely burnt during an operation for the removal of tonsils and adenoids at the West Middlesex Hospital; by her mother, suing as her next friend, she claimed damages from the surgeon and the anaesthetist, but did not bring her action within six months. The doctors denied negligence and relied on the protection of the Act. The patient maintained that it did not apply to them. It would, her advisers said, have protected the Middlesex County Council, but they were not responsible for the actions of these doctors. When doctors are employed by a local authority they are not servants carrying out the orders of their employer; they act on their own discretion in accordance with their skill, and are independent contractors. Therefore, said the patient, they cannot claim the protection which the Act gives to the council employing them.

Counsel for the doctors submitted that the Act clearly protects individuals as well as public bodies. Mr. Justice Atkinson, trying the preliminary point of law, remarked (*Times*, October 6, 1939) that it was curious that the precise point seemed never to have been argued before. A servant or agent of a local authority has long been recognized to be entitled to the same protection as the local authority itself, but these doctors were not servants or agents. He pointed, however, to an admission in Freeborn *v.* Leeming (1926) that a medical officer is entitled to the same protection as a public authority; and to Mr. Justice McCardie's remark in Venn *v.* Tedesco (1926) that it was conceded that medical officers were within the class of individuals covered by the Act. That judge, said his lordship, would never have referred to that admission unless he had thought it was right. In those cases, therefore, the law had been regarded as settled, and he could not now rule differently unless he thought they were wrong. In fact, he thought they were right, and that as the doctors were acting in pursuance of a duty laid on the Council they were entitled to the benefit of the Act.

INSANITY AND CIVIL RESPONSIBILITY

Insanity as a defence to a criminal charge—usually murder—is familiar. By the "MacNaghten rule" a man is responsible for his actions unless by reason of disease of the mind he did not know what he was doing or that what he was doing was wrong. It has recently been held in the Divorce Court[1] that intention is a necessary ingredient of the matrimonial offences of cruelty or desertion, and that if the respondent, by reason of insanity, is incapable of forming the intention to be cruel or of retaining the intention to desert, the petition on those grounds must fail.

The degree of insanity which will afford a sufficient answer to a civil action of negligence has been discussed interestingly in a county court case by his honour Judge Konstam, K.C.[2] A cab driver suddenly swerved from his proper side and ran into a lorry. He immediately got out and stabbed himself several times with a carving knife. He said he had swerved to avoid a cyclist, and the medical evidence showed that no cyclist had been there and that the man suffered from hallucinations and delusions. The judge was satisfied that the swerve was due to the sudden impulse of an unbalanced mind, but found that the driver understood the nature and consequences of his act. He remarked that the question was not covered by any direct or binding authority. Lord Esher, in Hanbury *v.* Hanbury (1892), treated the test of responsibility as the same in criminal and in civil actions, but no question of negligence arose in that case. His honour quoted textbook writers who said that the question for the jury was whether the defendant was sufficiently self-possessed to be capable of taking care, and that the lunacy must be so extreme as to deprive its victim of all power of deliberate choice. Sudden illness, other than mental, which deprives its victim of the power of using skill and care is a good defence. The learned judge therefore concluded that there exists in law a sound distinction between negligence and other grounds of action. As this driver was not sufficiently self-possessed to be capable of taking care, and the swerve was not the conscious act of his volition, neither he nor his employers could be held responsible.

This judgment is not a binding authority, but seems to rest on solid foundations and to point to the tests which the High Court would probably apply in a similar case.

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[1] *British Medical Journal*, September 9, p. 590.

[2] United Kosher Poulterers Ltd. *v.* Prouse. 1939. 6 *Law J.*, C.C.R. 241.

Experimental Pulmonary Embolism.—Intravenous injection of air, fat, or a starch suspension in rabbits caused changes in the electrocardiogram similar to those found in infarct of the heart muscle, and also changes typical of a right bundle-branch block (old nomenclature). In the majority of experiments the electrocardiogram returned to normal after recovery from the embolism, although widespread necroses were present in the wall of the right ventricle. These changes seem to be due to the sudden overloading of the right ventricle.—Electrocardiographic and Histological Examination of Heart in Experimental Pulmonary Embolism produced by Air, Fat, or by Starch Suspension: R. Walder.—*Beitr. path. Anat.* May 26, 1939, **102**, 485.

The Services

HEALTH OF THE ARMY IN PEACE

The report on the health of the Army for 1937[1] is the seventy-third such volume, which means that the first appeared in the 'sixties, when the sanitary reforms brought about by the Sidney Herbert Commission were beginning to have their effect. The present report gives us a picture of an Army healthier than it has ever been during that three-quarters of a century history. The same causes affect the health of the military and of the civil population, but conditions of selection and discipline in the Army favour a still higher standard, while, on the other hand, the soldier, particularly at foreign stations, faces certain liabilities which make him a more likely prey to disease. Of both soldier and civilian the paradox holds good that at a moment when their protection from disease was most assured, their liability to wounds, injuries, and violent death was never greater. The onslaught of disease has been stayed, but this other Moloch, whose blind strokes no medical wisdom can avert, gets a new momentum.

Hospital Admissions

The rate of admissions to hospital in 1937 decreased by 14.1 per 1,000 of strength as compared with the previous year, and was only 21.5 per 1,000 higher than the rate for 1935, which was the lowest recorded since the great war; while the death ratio of 1.97 per 1,000 and the ratio of 6.8 for invalids discharged from the Service were absolutely the lowest. The principal causes of admission to hospitals were influenza, inflammation of areolar tissue (chiefly boils and carbuncles), inflammation of tonsils, and venereal diseases. Influenza shows a considerable increase over the previous year. It heads the list of causes of admission in all the home commands except the Western, where inflammation of tonsils has that pre-eminence. The principal cause of invalidity leading to discharge from the Army was tuberculosis. It is worth noting in passing that the Royal Army Medical Corps had almost the highest incidence of pulmonary tuberculosis to be found in any unit.

The effect of common ailments on military efficiency varies according to the station. In the home commands local injuries account for the greatest number of lost days. By far the most common of these were fractures of the tibia and/or fibula and the radius and/or ulna, followed by the carpus or metacarpus. In India the commonest cause was malaria, although the rate for malaria was down on the year, and indeed was the lowest yet recorded. The reasons assigned for this satisfactory result are less rainfall, earlier onset of cold weather, more intensive applications of anti-malarial measures, and greater co-operation between civil and military health administrations. The treatment of malaria in India is carried out sometimes with quinine and plasmoquine, but usually with atebrin followed by plasmoquine. It is pointed out that the investigations under the auspices of the Malaria Commission of the League of Nations Health Organization have confirmed in every respect the careful initial work undertaken in the military hospitals in India on the use of synthetic drugs.

Value of New Drugs

An extensive trial has been made at nearly all the Army stations of drugs of the sulphonamide group, and it is stated that these drugs have effected the saving of life by overcoming infections by the streptococcus—not necessarily haemolytic—notably severe attacks of erysipelas and septicaemia, and that less severe disorders, such as pyelitis, cystitis, and other genito-urinary infections are rapidly cleared up by this form of treatment. Some forms of streptococcal tonsillitis have been found to get well quickly, while others appeared to resist the action of the drugs. Staphylococcal infections are not usually influenced, but one instance is recorded where staphylococcal septicaemia was rapidly brought under control. The reports from Army stations have encouraged the belief that this group of drugs will also reduce the mortality of cerebrospinal fever.

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[1] H.M. Stationery Office. (2s. 6d. net, postage extra.)

As to venereal diseases, it is mentioned that the polyvalent vaccine of mixed gonococcal and secondary organisms was tried in several areas with some measure of success, but this again has been abandoned in favour of sulphanilamide, which has been used in the treatment of gonorrhoea at home and abroad with apparently satisfactory results. The evidence available, says the report, indicates that it is a great advance on any treatment hitherto adopted. The dermatological specialist at Aldershot states that the whole atmosphere of the gonorrhoea wards has altered with the introduction of this new remedy. The patients, instead of being dull and troublesome, are now cheerful and anxious to get on with their treatment.

An interesting report is forthcoming from the vaccine department of the Royal Army Medical College, which supplies vaccines for the use of both the Army and the Royal Air Force. Increased demands were made in 1937 for all types of vaccines except the mixed influenza and catarrh vaccine, which is no longer recommended as a routine prophylactic. Over 99 per cent. of the troops and their families who embarked for service over-seas availed themselves of typhoid-paratyphoid inoculation. Diphtheria in 1937 showed a remarkable decrease among the Army population; this is credited to the immunization of the Army children, 95 per cent. of whom are now immunized with toxoid-antitoxin floccules. In another part of the report a great deal of useful information is included on the pathological work in the military laboratories in India.

Medical Examination of Recruits

It will be remembered that in 1936 the War Office decided that an attempt should be made to recondition applicants for enlistment who were below the standards for weight and chest measurement. Hitherto these men had been rejected outright. A course of special training for under-developed lads and border-line recruits suffering from various defects was instituted, and of those who completed this course in 1937, 90.5 per cent. were subsequently passed as fit. The after-history of these squads has been studied, and has shown that about one-third of them continued to make steady progress, and in most of the others there was intermittent progress. The average height and weight of all recruits enlisted in the home commands, other than the Southern Command, was 66.5 in. and 130.63 lb. respectively, but in the Southern Command a system has been instituted whereby heights and weights are recorded in age groups, and the other commands are now to adopt the same system. The average increase of weight among recruits under training during the year was 9.17 lb. This figure shows a fairly steady increase year by year. The chief cause of rejection is disease of the middle ear, including deafness. This cause accounts for more than twice as many rejections as either of the next two principal causes—namely, loss or decay of many teeth and defective vision.

In the light of the events of 1939 the year 1937 must be described as a year of peace, yet various operations were taking place in different parts of the world and were causing concern to those who had in charge the health of the British Army. The war in Spain, for example, caused Gibraltar to be overcrowded with refugees. In Palestine a number of troops were kept in conditions of field service, but the general health was good, and, although parts of Palestine are malarious, the malaria was well controlled. In India active operations were in progress in Waziristan, in which British and Indian troops were engaged, but here again health was very good, and sick rates were only slightly in excess of those obtaining in times of peace. For the first time evacuation of casualties was carried out by air from Waziristan, which is on the North-West Frontier. The number evacuated by air was just over 100, and the time as compared with road and rail was shortened by about five-sixths. Finally, in the Far East there was not only a major war but a cholera epidemic. Conditions were at their worst in Shanghai, with an appalling lack of sanitation, but the British troops were apparently almost immune. Only at Shanghai did any cases of cholera occur among military personnel; these numbered only five, and were considered to be due to neglect of orders and consumption of ice-cream from an unauthorized source. The outbreak of cholera among the civil population led to a much larger quantity of cholera vaccine than usual being supplied from the Royal Army Medical College. A strain of *Vibrio cholerae* obtained from Shanghai was incorporated in the vaccine.

Attention is being paid in every command to the hygiene of Army barracks. It is mentioned that at Gibraltar the polishing of the barrack floors is thought to have contributed to a decrease in the respiratory group of diseases—coughs, colds, and sore throats—which fell from 171 to 111 per 1,000 of strength. Married quarters are being improved, maternity and child welfare centres for soldiers' families are multiplying, and the report touches on many matters which favourably affect the comfort and well-being of the soldier and those dependent on him. More than half this volume is taken up with separate reports from the eight commands at home and the thirteen countries abroad in which the British Army is stationed.

MENTIONS IN DISPATCHES

Operations in Waziristan

The King has approved the promotion of Major M. P. Power, O.B.E., M.C., R.A.M.C., to be Brevet Lieutenant-Colonel for distinguished services rendered in the field in connexion with the operations in Waziristan.

The names of Lieutenant-Colonel J. R. N. Warburton, M.C., R.A.M.C., Major M. P. Power, O.B.E., M.C., R.A.M.C., Captain W. M. Stewart, R.A.M.C., Lieutenant-Colonel R. A. Logan, I.M.S., and Assistant Surgeon (Second Class) R. J. A. Ronto, I.M.S., have been brought to notice by the Commander-in-Chief in India for distinguished services rendered in connexion with the operations in Waziristan.

Operations in Palestine

The names of Colonel A. Hood, C.B.E., R.A.M.C., Major J. W. Malcolm, O.B.E., M.C., R.A.M.C., Captain K. G. F. Mackenzie, R.A.M.C., and Flight Lieutenant L. M. Crooks, R.A.F.M.S., have been brought to notice in recognition of distinguished services rendered in connexion with recent operations in Palestine.

CASUALTIES IN THE MEDICAL SERVICES

Royal Navy

Probationary Surgeon Lieutenant **Herbert Julian Cornelius**, R.N.V.R., who lost his life when H.M.S. *Royal Oak* was sunk by a submarine in Scapa Flow on October 14, took the M.R.C.S., L.R.C.P. as recently as January, and the M.B., B.S. of the University of London in June. He was elected a member of the British Medical Association on June 6.

DEATHS IN THE SERVICES

Surgeon Rear-Admiral Sir **Patrick Brodie Handyside**, K.B.E., C.B., R.N. (ret.), died at Gullane on October 15, aged 79. He was born in March, 1860, and was educated at Edinburgh Academy and the University of Edinburgh, where he graduated M.B., C.M. in 1883. Entering the Royal Navy as assistant surgeon in 1884, he became fleet surgeon in 1903 and surgeon rear-admiral on April 17, 1917. He was made C.B. in 1918 and K.B.E. in 1919. In 1918 he also received the Japanese Order of the Sacred Treasure (Second Class). As surgeon of H.M.S. *Fox* he served in the campaign of 1898 in Sierra Leone, landed with a force which took Manah Salya and Kwalin and rescued a party of eighty refugees, receiving the West African medal, with clasp for Sierra Leone. He married Lilly Chester, daughter of Lieutenant-Colonel H. M. Blenkinsop, late I.M.S. He had been a member of the British Medical Association for forty-three years, and at the Annual Meeting of the Association held at Brighton in 1913 he was vice-president of the Navy, Army, and Ambulance Section.

Major-General **William Charles Hughan Forster**, C.I.E., I.M.S. (ret.), died suddenly at Northlew, Devon, on October 11, aged 65. He was born on June 15, 1874, and was educated at

Edinburgh University, where he graduated M.B., C.M., with honours, in 1896, subsequently taking the D.P.H. at Cambridge in 1899. After filling the posts of house-surgeon for out-patients at Edinburgh Royal Infirmary and assistant resident medical officer at the National Hospital for Consumption, Ventnor, he entered the Indian Medical Service as lieutenant on July 27, 1899, attaining the rank of colonel on November 27, 1927, and of major-general on November 5, 1929. He retired on July 19, 1933. After four years of military duty he entered civil employ in April, 1904, as deputy sanitary commissioner in the Punjab. In April, 1909, he was appointed professor of hygiene and pathology in the Lahore Medical College and in August, 1918, became sanitary commissioner of the Punjab, the title of his office being changed to director of public health in November, 1921. On promotion to the administrative grade in 1927 he was posted to the inspector-generalship if civil hospitals in Burma, and in November, 1929, he was promoted to surgeon-general of Bombay, with the rank of major-general. In 1932–3 he was a member of the Bombay Legislative Council. He served on the North-West Frontier of India in the Waziristan campaign of 1901–2, receiving the frontier medal with a clasp. He was the author of several articles in *Scientific Memoirs*.

Lieutenant-Colonel THOMAS BIGGAM, R.A.M.C. (ret.), was born on January 15, 1874, and was educated at the University of Edinburgh, where he graduated M.B., Ch.B. in 1897. He entered the R.A.M.C. as lieutenant on April 25, 1900, became lieutenant-colonel on December 26, 1917, and retired on April 30, 1920. He served in the South African War, when he took part in operations in Cape Colony in 1900, and in the China War of 1900, receiving the medal.

Lieutenant-Colonel GILBERT HENRY DIVE, D.S.O., R.A.M.C. (ret.), was born in New Zealand on May 29, 1882, and was educated at Wanganui College, the University of Otago, and St. Bartholomew's Hospital. He took the M.R.C.S., L.R.C.P. in 1906, the M.R.C.P. in 1910, the D.P.H.Oxford in 1911, and the D.T.M. and H. of the English Colleges in 1925. He was house-physician at the West London Hospital in 1907 and house-surgeon at St. Bartholomew's Hospital in 1908–9. He entered the R.A.M.C. as lieutenant on July 31, 1909, and was clinical assistant to the professor of tropical medicine at the Military Hospital, Millbank, from 1910–12. He was a member of the British Expeditionary Force at Tsingtau in 1914, when he was mentioned in dispatches. He received a brevet majority on January 1, 1918, became major on July 31, 1921, and retired on May 29, 1937, shortly after his promotion to lieutenant-colonel. He served in Belgium and France in the war of 1914–18, when he was mentioned four times in dispatches. He received the D.S.O., the Medaille d'Honneur des Epidémies, and the Croix de Guerre. He had been a member of the British Medical Association since 1926.

Universities and Colleges

UNIVERSITY OF OXFORD

Sir Charles Sherrington, O.M., G.B.E., M.D., F.R.S., formerly Waynflete Professor of Physiology in the University, has been elected to an honorary Fellowship at Magdalen College.

UNIVERSITY OF CAMBRIDGE

The outgoing Vice-Chancellor, Professor H. R. Dean, M.D., F.R.C.P., Master of Trinity Hall, has been elected to the Council of the Senate.

At a congregation on October 21 the following medical degrees were conferred:

M.B., B.CHIR.—*N. Langdon-Down, *G. Oppenheimer, *D. L. Ridout, *A. M. Ogilvie, *G. S. Robinson, *A. Hargreaves, J. D. Younghusband, N. J. P. Hewlings, J. C. R. Nuttall-Smith, J. B. Murray, B. W. Powell, J. W. Shackle.

M.B.—*J. G. Warren, *L. J. Haydon.

* By proxy.

UNIVERSITY OF LONDON

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

The following candidates have been approved at the examination indicated:

ACADEMIC POSTGRADUATE DIPLOMA IN PUBLIC HEALTH.—Eva M. Cran, M. Daniels, Christina A. Gunn, S. M. H. Naqvi, G. H. Shaw, C. S. Thomson, N. V. Williams.

UNIVERSITY OF DURHAM

The following candidates have satisfied the examiners at the examination indicated:

FINAL M.B., B.S.—J. K. Adamson, M. Anderson, D. O. Bowes, Sheila D. M. Brown, W. E. Chapman, Margaret I. Dufty, F. N. C. Evans, R. J. Gray, J. D. S. Hethcote, S. Hickling, K. J. Higham, A. F. Hutchison, J. W. G. McDougall, E. A. Milner, R. H. Richardson, T. J. W. Robson, J. P. Simpson, T. D. Todd.

UNIVERSITY OF WALES

The following candidates have satisfied the examiners at the examination indicated:

DIPLOMA IN PUBLIC HEALTH.—*Part II:* H. L. Ackerman, D. J. Davies, S. H. Graham, C. T. Jones, J. J. O'Reilly, J. Paterson, H. R. Stubbins, *A. J. Thomas.

WELSH NATIONAL SCHOOL OF MEDICINE

The following candidates for the degrees of M.B., B.Ch. have satisfied the examiners at the examination indicated:

HYGIENE.—Mary E. Budding, Doreen M. E. Cranch, Enid Curran, *Joan B. Davies, T. C. H. Davies, I. L. R. Evans, D. I. Harries, Marguerite J. Hennelly, Helen C. Hodges, *D. D. Howell, O. Howell, D. H. Jenkins, R. T. Jenkins, G. A. Jones, J. V. Jones, Anne N. M. Llewhelin, J. E. Lloyd, Mary E. Lloyd, S. Love, Brenda M. Mead, D. G. Morris, R. E. Packer, Mary G. Powell, H. V. Roberts, D. C. Taylor, C. E. Thomas, T. Walker.

* With distinction.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A quarterly meeting of the Council of the Royal College of Surgeons of England was held on October 12, with the President, Mr. Hugh Lett, in the chair.

Mr. R. St. Leger Brockman was re-elected a member of the Court of Examiners for a further period of five years.

Mr. H. F. Humphreys was re-elected a member of the Board of Examiners in Dental Surgery for a further period of five years.

It was decided to cancel the arrangements for holding the forthcoming primary examinations for the Fellowship in India, Egypt, and Australasia.

It was not found necessary to make any change in the regulations for the Primary or Final Fellowship examinations during the war.

It will be possible to conduct the Fellowship and dental examinations in London in the normal way on the next occasion.

The following arrangements have been made regarding Lectures: Arnott and Erasmus Wilson demonstrations, the autumn series has been cancelled; Hunterian Lectures, the lecturers will be asked to deliver their lectures if able to do so, if unable, they may publish the lecture and use the title "Hunterian Professor"; Moynihan Lecture, to be given by Professor Ernest W. Hey Groves in March, 1940; Thomas Vicary Lecture, to be given by Sir Walter Langdon-Brown as arranged on November 30, but at 3 p.m.; Bradshaw Lecture, to be given by Sir James Walton as arranged on December 14, but at 3.30 p.m.

The Licence in Dental Surgery

Until further notice the following relaxation in the regulations for admission to the examinations for the L.D.S., R.C.S., will be effective:

1. The two-years instruction in dental mechanics is reduced to eighteen months, of which not less than twelve months must be taken at a required dental school.

2. Instruction in dental mechanics is recognized from the date of passing in two of the three subjects of the pre-medical examination (chemistry, physics, biology), but the pre-medical examination must be completed before admission to the first examination.

3. The instruction in anatomy and physiology, including special anatomy and physiology, may be signed for thirty weeks, which *may* be consecutive.

4. Where arrangements are impracticable for the ordinary two years' clinical work in dental surgery, during the first of which general medicine, surgery, and pathology are taken, a six-months course of instruction in egneral medicine, surgery, and pathology, followed by eighteen months of clinical work in dental surgery, will be accepted.

5. It will be seen that these relaxations reduce the total curriculum to three and a half years from the date of passing in two subjects of the pre-medical examinations, the six months being taken off the instruction in dental mechanics.

6. In the examinations, candidates will not be expected to work in gold, but in base metal only.

The Museum is closed but the Library will remain open until further notice. The Buckston Browne Dinner will not be held this year. The annual meeting of Fellows and Members will be held on November 16, at 3 p.m., and not 4 p.m. as previously arranged.

Diplomas of Fellowship were granted to Eric Samuel and Robert Clarence Laird.

Diplomas of Membership were granted to Phiroz Burjor Banaji, Robert Douglas Neil Bisset, John David Dudley Boswell, John Cuthbert Herapath, Henry Edwin Hobbs, Frederick Grafton Lougee, Simon Meleck, Puzhankara Ananakumara Menon, Frank Bradbury Norrish, John Ffrangçon Roberts, Allan Robert Frederick Thompson, Michael Milnes Walker, John Fisher Williams.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the Royal College of Surgeons of Edinburgh held on October 17, with Mr. W. J. Stuart, President, in the chair, the following, having passed the requisite examinations, were admitted Fellows:

H. Ahmed, D. I. Adler, Y. N. Ajinkya, G. M. Arnott, H. A. Bali, S. P. Barnett, D. Barton, J. E. M. Cairncross, C. F. Chapple, H. M. Coleman, W. M. Couper, J. F. Curr, G. H. Darke, G. S. Dhillon, N. N. Dravid, A. S. Duncan, J. T. Farr, H. L. Fuller, F. W. Grauer, J. H. Hofmeyr, I. Karro, J. A. Kersley, A. A. Khan, G. D. Killawala, J. A. Kilpatrick, D. H. Lees, A. Lutton, J. Macaskill, J. K. McCollum, W. McKechnie, C. M. Marsden, G. D. Matthew, R. Mundy, D. F. O'Brien, A. Orlek, J. H. Pierre, D. A. Reid, J. W. R. Rennie, R. Roaf, H. G. Roberts, Juliet M. De Sa, J. A. L. Scott, G. C. Sen, F. D. Smith, E. Somasekhar, A. Trottier, F. R. Tucker, J. R. A. White, L. J. Wigston, J. D. Wilson.

At the annual meeting of the Royal College of Surgeons of Edinburgh, held on October 18, the following officers were elected for the ensuing year:

President, Dr. H. M. Traquair. *Vice-President*, Mr. W. J. Stuart. *Secretary and Treasurer and Conservator of Museum*, Mr. J. W. Struthers. *Representative on the General Medical Council*, Mr. Alex. Miles. *Convener of Museum Committee*, Mr. W. Quarry Wood. *Librarian*, Mr. J. J. M. Shaw.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

The customary seasonal increase in the incidence of scarlet fever, diphtheria, and pneumonia (primary and influenzal) in England and Wales during the autumn has been observed during the week, but the numbers notified are well below the level of the corresponding week in 1938. The effect of the abnormal distribution of an appreciable proportion of susceptible subjects would appear on the whole to be a favourable one from the epidemiological standpoint, although it is too early to ascribe the lowered incidence solely to this factor. In Eire and Northern Ireland, where there has been no such movement of children, diphtheria has remained below and scarlet fever in excess of the figures recorded last year. To a lesser degree the same holds true for Scotland. The effect of the evacuation of large numbers of children in England is exemplified by comparison of the number of notifications of scarlet fever, diphtheria, and pneumonia in the four largest cities during the present week and the corresponding week last year, the figures for which are given in parentheses:

	Scarlet Fever	Diphtheria	Pneumonia
London ..	32 (180)	25 (125)	24 (47)
Manchester	12 (33)	12 (17)	3 (20)
Birmingham	18 (31)	22 (36)	11 (27)
Liverpool	23 (35)	29 (16)	9 (15)

It is seen that while the decreases for these diseases in England and Wales vary from some 10 to 25 per cent., notifications in these cities have fallen in some instances to a fraction of their value last year—for example, scarlet fever in London fell to one-sixth. The pneumonia figures are naturally less affected as adults are attacked more frequently than children; the observed reduction in the incidence of pneumonia may be due in part to climatic factors, to which, to some extent, may be attributed the general fall in scarlet fever and diphtheria. Dysentery is also below last year's level, although it has increased somewhat recently, the notifications for the last three weeks being 22, 23, 37. Notifications were received from twelve counties, and only one town or district in each county was affected. More than 3 notifications were recorded in Orpington (Kent) 9, Warrington (Lancaster) 6, Amersham (Bucks) 4, Colchester (Essex), Devizes (Wilts), and Bristol (Gloucester) 3 each.

Acute Poliomyelitis

The distractions of war have perhaps in part diverted attention from the fact that poliomyelitis has reappeared in the form of outbreaks, although the weekly notifications for the whole country have at no period reached the 1938 level. In the last four weeks notifications for England and Wales were 29, 38, 43, 42 (present week), compared with 76, 60, 56, 65, in the corresponding weeks of last year. The sporadic and widely distributed character of the disease is illustrated by the fact that twenty counties are at present affected, giving a weekly average of 2 per county. Essex, which was severely hit last year, has practically escaped, while the adjacent county of Kent, across the River Thames, has produced the largest number of cases so far, urban and rural areas being equally involved. Counties reporting more than two cases were Kent 9 (Herne Bay 2, Dover urban, Dover rural, Gillingham, Maidstone urban, Maidstone rural, Whitstable, Queenborough, 1 each); Lancaster 5 (St. Helens 2, Blackburn, Bolton, Littleborough, 1 each); Middlesex 5 (Willesden 2, Harrow 1, Ruislip and Northwood 1, Yiewsley and West Drayton 1); Warwick 3 (Birmingham, Rugby urban, and Coventry, 1 each).

Dysentery in Europe

Notification of dysentery is in force in all European countries with the exception of Portugal and Albania, but the accuracy of the data varies greatly in different countries and even in different areas of the same country, according to the facilities for diagnosis and collection of records. The distinction made in notification between the bacillary and amoebic forms of the disease is only enforced in Holland, Italy, Rumania, and Turkey. The Balkans are chiefly affected, and generally speaking the bacillary form is predominant. As in respect of enteric infections generally, dysentery has its maximum prevalence in the late summer and autumn months. In 1938 the maximum was reached in August and September in Germany and Hungary, in August in Rumania, Czecho-Slovakia, and Yugoslavia, and in October in Poland. In Germany the yearly numbers reported have varied from 2,525 with 122 deaths in 1933, to 7,545 with 181 deaths in 1937, while in 1938 there were 5,255 cases and 161 deaths. The character of the disease has apparently become less virulent, although in some other countries the reverse has been observed. In Hungary, for instance, the disease has become both more prevalent and more fatal; there were 1,385 cases with 260 deaths in 1933, and 6,441 cases with 717 deaths in 1938. The situation has been even worse in Poland and Rumania, in which countries there were 6,398 cases with 703 deaths and 6,459 cases with 1,182 deaths, respectively, in 1938. In Czecho-Slovakia and Yugoslavia there have been considerable fluctuations in the last few years; in the former notification fell from 3,059 cases (334 deaths) in 1937 to 639 cases (67 deaths) in 1938; in Yugoslavia the corresponding figures were 2,358 (148 deaths) and 1,278 (104 deaths).

Blood Alcohol.—In a comprehensive paper McGrath describes fully the method of estimation of blood alcohol, the various factors which may influence the concentration of alcohol in the blood, and the medico-legal aspects of the test. The test does not supply an automatic answer to the question "Was the individual drunk?" but may indicate, almost with certainty, that a person was sober at the time of taking the blood sample.—Method and Significance of Blood Alcohol Estimations. J. McGrath.—*Irish J. med. Sci.*, July, 1939, 6, 304.

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INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended October 7, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	18	3	9	2	—	14	1	4	—	—
Deaths		—	1				1	1		
Diphtheria	952	25	223	29	28	1,166	125	202	53	32
Deaths	19	—	5	2	1	28	2	6	3	—
Dysentery	37	1	69	—	—	45	12	16	—	1
Deaths			1	—	—			—	—	—
Encephalitis lethargica, acute	2	—	—	—	—	5	—	2	—	—
Deaths		1	1				—	—		
Enteric (typhoid and paratyphoid) fever ..	39	5	3	3	4	24	5	12	5	1
Deaths	3	2	—	2	—	1	—	—	1	—
Erysipelas			57	8	4			63	6	5
Deaths		—	—				1	—		
Infective enteritis or diarrhoea under 2 years ..										
Deaths	28	5	23	8	12	57	7	13	16	3
Measles			8		11		24	17		3
Deaths	1	—	—	—	1	1	—	—	—	—
Ophthalmia neonatorum	85	2	14		—	94	10	28		1
Deaths										
Pneumonia, influenzal*	379	24	7	—	6	453	47	5	1	12
Deaths (from influenza)	14	3	3	—	2	22	2	—	1	—
Pneumonia, primary			102	10				152	6	
Deaths		3		6	5		8		7	2
Polio-encephalitis, acute	2	—				3	1			
Deaths		—					—			
Poliomyelitis, acute	42	1	—	1	1	65	6	8	1	1
Deaths		—	—				1	1		
Puerperal fever	3	3	16	3	1	7	7	13	1	1
Deaths		1†					1†			
Puerperal pyrexia	150	7	17		1	176	16	16		3
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,263	32	214	65	92	1,734	180	389	56	89
Deaths	1	—	—	—	—	—	—	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough			17		4		43	109		6
Deaths	5	—	—	—	—	8	—	2	1	—
Deaths (0–1 year)	267	24	68	27	30	288	43	55	36	15
Infant mortality rate (per 1,000 live births)						48	35			
Deaths (excluding stillbirths)	4,370	669	588	185	150	4,062	745	541	163	125
Annual death rate (per 1,000 persons living)			11.9	12.4	13.2	10.0	9.5	11.0	11.0	11.1
Live births	5,324	736	812	270	208	5,981	1,180	852	330	199
Annual rate per 1,000 persons living			16.4	18.2	18.3	14.7	15.0	17.4	22.3	17.6
Stillbirths	208	12	43			225	30			
Rate per 1,000 total births (including stillborn)			50			36	25			

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Death from puerperal sepsis

Medical Notes in Parliament

Business in the House of Commons this week included discussion of British relations with India and progress with the Prices of Goods Bill.

There has been presented to the House of Commons a copy of an international agreement revising the Agreement of 1906 respecting the unification of pharmacopoeial formulae for potent drugs. The revised agreement was signed at Brussels in August, 1929, and His Majesty's Government in the United Kingdom acceded to it on August 1, 1939.

More Hospital Beds in Scotland

Mr. COLVILLE, answering Sir Charles MacAndrew on October 18, announced arrangements under which additional hospital facilities provided under the Emergency Casualty Hospitals Scheme in various parts of Scotland would be available up to the limit of their capacity not only for civilian war casualties but also for ordinary sick persons in those areas who were in urgent need of hospital treatment which could not be obtained elsewhere. The additional hospital beds under the scheme would come into commission in increasing numbers in the near future.

Local authorities and other hospital authorities would be informed as these additional beds became available in areas suitable for their purposes, and full instructions would be given as to the procedure for the admission of patients and for the recovery of the cost of treatment in suitable cases.

Thefts of Drugs from Cars

Mr. ALFRED EDWARDS asked Sir John Anderson on October 19 if, in view of the many cases of dangerous drugs stolen from the cars of medical practitioners, he would take steps to ensure that such persons were penalized for their neglect. Sir JOHN ANDERSON replied that it was important that special care should be taken as regards the custody of drugs, but he knew of no ground for the suggestion that legislation was required to check carelessness by medical practitioners. The Home Office only heard of fourteen cases in the last twelve months where drugs had been included among articles stolen from cars. In ten of these the drugs were recovered intact.

Dr. HADEN GUEST: Is there any foundation for the suggestion that a large number of these losses has taken place? It seems rather a slur on the medical profession.

Mr. A. EDWARDS asked if Sir John Anderson knew that the B.B.C. frequently had to warn people of these occurrences and against taking the drugs.

Sir John did not reply to these questions.

Welfare Services in War Time

Mr. GEORGE GRIFFITHS asked on October 19 when the ante-natal and the child welfare centres and the tuberculosis dispensaries of local authorities would resume their normal activities. Dr. ELLIOT answered that local authorities generally were using their best endeavours to remedy such disturbances as had been caused by war conditions in these services. His policy was to encourage this process to the utmost. The extent of the service required in any particular area might have been increased or decreased as the result of changes in the distribution of the population, so it was scarcely possible to say when a condition which could be described as normal would be reached in all areas.

On October 24 Mr. D. ADAMS asked the Minister of Health whether he would take steps to ascertain whether attendances at child welfare clinics were being maintained. Miss HORSBRUGH replied that welfare authorities generally were doing their best to maintain these services, and the Ministry's regional medical staff were asked to keep the position in different localities under review. It was desirable in present circumstances to keep down specific requests for information from the Ministry to local authorities as far as possible. Miss Horsbrugh also assured Mr. D. Adams that, in weighing the needs of the nation in financial and other respects, the Government would attach full importance to the adequate maintenance of the health services, which they recognized as a necessary part of the nation's requirement in war as well as in peace.

Personnel of Medical Boards

On October 19 Mr. T. GROVES asked why in Surrey two medical men received £1,000 per year for examination of recruits for the Forces, whereas in the same area other available doctors were denied the opportunity of acting for such boards. Mr. ERNEST BROWN answered that there were five medical boards in Surrey, members of which were drawn from panels consisting in all of over seventy practitioners. He did not think any increase in this number necessary. Payment was made not at a fixed annual rate but by fees according to the number of sessions attended. He would inquire into the distribution of the work among the members of the panels, but was not aware of any dissatisfaction in this matter. Nor was he aware of any general dissatisfaction among members of the medical profession with the personnel of medical boards. He received representations last August from the Medical Practitioners' Union with regard to the method of selecting this personnel. He was not satisfied that any change was necessary.

Tuberculosis Services in Wales

Dr. ELLIOT told Mr. James Griffiths on October 19 that action on the Report on Anti-tuberculosis Services in Wales had unfortunately been interrupted by the war. He could not say how soon it would be possible, in the new circumstances, for the authorities concerned to complete their consideration of the matters involved. Hutted hospitals in Denbigh and at Chepstow were being proceeded with. These would be of assistance, subject to the requirements of the casualty service, in connexion with tuberculous patients.

Payment of Doctors in Reception Areas

Dr. ELLIOT said on October 19 that he was not aware that medical men in certain areas to which children had been evacuated were informed that payment could not be made out of the funds provided for the medical attendance and treatment of these children unless such medical men had joined the scheme for the protection of practices instituted by a voluntary organization of medical men. He had not sanctioned such procedure. He had received a complaint that the condition was being imposed in one area, but had ascertained on inquiry that this complaint was without foundation.

Second Evacuation of School Children

The supplementary scheme of evacuation, which is confined to unaccompanied school children, has been carried out in several areas, and will be completed in all the evacuating areas in the next two or three weeks. Dr. Elliot has given orders that evacuating authorities shall carry out medical inspection and, if necessary, treatment of all children in the parties.

In a reply on October 19 to Mr. McEntee, Dr. ELLIOT announced that about 11,000 expectant mothers and 445,000 mothers and young children were evacuated at the outbreak of war. He now awaited a return from local authorities of the numbers who still remained in the reception areas.

Compensation for Civilian War Injury

In the House of Commons on October 24 Mrs. ADAMSON moved for an address to the King asking for the annulment of the Personal Injuries (Civilian) Scheme, 1939. She said that the scheme was not wide enough. She objected to the provisions affecting women and children, particularly in regard to injuries and pensions allowances for wives. Dr. EDITH SUMMERSKILL, in seconding the motion, said that in fixing the children's allowances the Government was advised by men who were scientifically out of date and were thinking in terms of nineteenth century medical science.

Sir **Francis Fremantle** said that Dr. Summerskill was wrong in saying that the Government was receiving out-of-date medical advice. She ought to know that the Medical Research Council was as up to date and as progressive as any body of beings could be in this country. Dr. Summerskill, interposing, said she had not attacked the Medical Research Council. Sir Francis Fremantle said that to meet all the criticisms which had been made during the debate would cost the country tens of millions of pounds. He agreed, however, with the criticism of the limitation imposed on the number of children to be provided for.

Sir **Walter Womersley**, replying to the debate, said that the scheme was an essential part of the general arrangements for the relief of war distress. In fixing these terms their decision had to be governed by the over-riding consideration that the resources of the Government for compensation for injury to persons were not unlimited. The scheme of compensation for war injury was not the last word, and when the war was over he believed that the House would insist on a review of the whole position. The Government had clearly laid down the principle that there could be no inherent right in the general population for compensation for the fact of injury, and that any liability accepted by the State towards those injured in the performance of public service must be in respect of actual loss resulting from injury. It was reasonable to limit compensation in respect of injury to persons not gainfully occupied to cases in which family circumstances gave evidence of actual need. An interdepartmental committee was inquiring into the anomalies with regard to children's allowances, and he hoped that a report would soon be forthcoming.

The motion for an address was negatived by 137 votes to 113, a Government majority of 24.

Hospital Treatment of Civilian Population

Dr. **Elliot**, replying to Mr. D. Adams on October 24, said that the accommodation in existing hospitals in England and Wales had been increased by the introduction of 100,000 additional beds, together with the necessary equipment; and arrangements had been made to provide the medical and nursing staff required for these beds. Beds were at present available in the hospitals of this country for all civilians in need of in-patient treatment. The building of huts to accommodate 38,000 further beds was well advanced, and some of these huts were already completed and equipped for immediate use. Every effort was being made to accelerate the completion of the remainder. It was his desire and intention that the necessity for providing hospital accommodation for members of the Forces should not prevent treatment being given to civilians whose health was in danger, and he trusted that the local hospital authorities, especially in areas such as Tyneside, where long waiting lists existed before the war, would make every possible use of the additional accommodation which was at present being provided in their areas.

Institutional Treatment of Tuberculous Persons

On October 24 Dr. **Elliot**, replying to Mr. Parker, said there was no question of the treatment of tuberculosis being at a standstill. While it had been necessary for such tuberculosis institutions as were included in the Emergency Hospital Scheme to keep a certain number of beds available for casualties, any consumptive requiring institutional treatment ought to be receiving it. Letters were now being sent to a number of these institutions releasing them for the present from any obligation to keep even a percentage of beds available under the Emergency Scheme, and these institutions would therefore be able to take in patients exactly as in normal times. Any discharged persons suffering from tuberculosis who would benefit by further treatment in an institution or who would act as sources of infection in their homes should at once be readmitted. The care and attention of tuberculous persons living at home was not at any time a normal function of a sanatorium except at a few special institutions, but was undertaken by the family medical attendant and the tuberculosis dispensary organization acting in co-operation.

Medical News

The Library of the British Medical Association will be open from 9.0 a.m. to 5.0 p.m. (1.0 p.m. Saturday) until further notice.

In view of the coming dark days the out-patient department of the National Hospital for Diseases of the Nervous System (Queen Square, W.C.) will, from October 30, be open daily at 9.30 a.m., except on Saturdays.

The annual public meeting of the Save the Children Fund, which was to have been held on October 28, with the Chinese Ambassador as principal speaker, has been abandoned owing to war conditions.

Owing to the outbreak of war it has been found necessary to cancel the members' meetings of the Eugenics Society arranged for November 21 and December 15. It is hoped to be able to resume the meetings in the early spring.

Unless cancelled by reason of the war, the next congress of the International Association of Women Doctors will be held at Budapest in 1940, when the following subjects will be discussed: (1) the hygiene of school children from the point of view of nutrition, school work, physical culture, and sleep; (2) the principles, methods, and results of anti-venereal legislation.

Before the outbreak of war arrangements were being made for the third All-India Obstetric and Gynaecological Congress to be held in Calcutta in December next. The subjects chosen for discussion were: (1) anaemia of pregnancy; (2) functional uterine haemorrhage; and (3) maternity and child welfare. Further information can be obtained from the secretary, Dr. S. Mitra, 3, Chowringhee Terrace, Calcutta.

The newspapers record that for the fourth time in thirty-six hours Dr. F. J. S. Hall of Deal went out in the Walmer lifeboat last week in a Channel gale in answer to S O S calls for medical aid from vessels anchored off Deal.

The Swiss League against Cancer will hold its annual meeting at Coira, Grisons, on November 25 and 26.

The *Gazette des Hôpitaux* states that the American hospital at Neuilly, Paris, has offered 500 beds for the French wounded and 1,500 more at its annexe at Etretat.

The issue of *Le Journal Médical Français* for July is devoted to the clinical, demographic, and social study of criminal abortion, and the issue of *Le Bulletin Médical* for August 26 to neuropsychiatry.

At the third International Congress of Neurology held at Copenhagen from August 21 to 25, which was attended by about 500 neurologists from all countries, it was decided that the next congress should be held in Paris in 1942 or 1943.

Owing to the absorption of psychological personnel by official emergency organizations for the treatment of mental casualties, a need has arisen to provide psychological guidance and treatment for those who, although not direct casualties, are suffering from nervous crises owing to war conditions. To meet this need the London Clinic of Psycho-Analysis (96, Gloucester Place, W.1) has organized a temporary psychological aid centre to be opened on Friday, November 3. Three units have been arranged for the purpose of providing advisory consultations and short emergency treatments on Mondays at 2 p.m., Wednesdays at 3 p.m., and Fridays at 2 p.m. The ordinary psycho-analytical routine of the clinic will not be affected by this auxiliary service. Analytical treatments will be carried on as before, and analytical consultations will be given at the usual time—namely, each Tuesday at 5 p.m. If necessary emergency treatments will also be provided on this day. In addition to the treatment of psychoneurotic crises, each unit will be ready to deal with disturbances of character and to advise on various psychological problems arising out of emergency conditions.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS.—All communications should be addressed to the Advertisement Manager (office hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the Office of the Cumann Dochtúirí na h-Éireann (I.M.A. and B.M.A.), 95, Merrion Square, W., Dublin (telephone 62550 Dublin).

QUERIES AND ANSWERS

Testosterone for Enlarged Prostate

Dr. C. HORWITZ (London, N.1) writes: I have a case of slightly enlarged prostate in a man aged 53 years. I would like to hear the experiences of any of your readers with regard to the use of testosterone propionate in such a case.

Fractured Femur in the Field

Dr. W. R. WILSON (Doncaster) writes: During the last war Captain F. B. Chevasse described in your columns a novel way of dealing with fractured femurs in the field (October 5, 1918, p. 373). Can you, please, or any of your readers, say to what extent it was used, and whether it stood the test of experience? The plan was to fasten the foot of the broken limb to the end of the stretcher and then elevate this end with the man on it up to 45 degrees (or more), allowing him to remain so until a convenient opportunity for evacuation. A strap or strong band was passed between the legs and made fast to the head end, tightly enough to maintain the amount of extension that had been achieved by the man's own weight. (Thomas's knee splint is very good, but it may not always be available when a stretcher is.) With sundry other bandaging the man was ready for carrying in the horizontal position.

Sawdust Bags for Wounds

Mr. K. KNOWLES, F.R.C.S.Ed., writes: I am sure many will welcome Mr. Ian Fraser's letter on war hospital supply depots (*Journal*, October 21, p. 829). Bags filled with fine sawdust have for very many years been used in the large C.M.S. Hospital, Srinagar, for discharging wounds. They are easily prepared and sterilized, and are cheap as well as satisfactory.

Income Tax

Refresher Course Expenses

"MEDICUS" has claimed to deduct under Schedule D expenses incurred in a refresher course not directed to the taking of a degree; the inspector of taxes has refused the claim.

⁂ The point has not been the subject of judicial decision, but we understand that the claim made by "Medicus" is allowed generally with the agreement of the Board of Inland Revenue. Where the course is not taken with a view to the obtaining of a degree, or to the expanding, as distinct from the bringing up to date, of the medical knowledge of the practitioner, the expense is analogous to the maintenance of the medical library or equipment and is allowable. We suggest that "Medicus" should ask his local inspector of taxes to submit the point to his headquarters.

Amount of Tax Payable

"CONJOINT" inquires what tax will be payable under the new Budget on a salary of £500 or £450 a year respectively less £102 expenses by a married man with one child.

⁂ The calculation is as follows:

Salary less expenses..		£398
Allowances: Earned Income	£80	
Personal	£180	
Child	£60	
		£320
Tax payable at 2s. 4d. on..		£78
		that is, £9 2s.

Assuming no further change next year than those already provided for, the tax payable for 1940-1 will be £21. On a basis of £450 less £102 expenses the tax payable for this year and next year would be £4 8s. 8d. and £13 2s. 6d. respectively.

LETTERS, NOTES, ETC.

A Students' Register: Correction

THE DEAN OF THE FACULTY OF MEDICINE of Liverpool University writes: May I point out, in reference to an incorrect statement in the *British Medical Journal* for October 21, 1939 (p. 821—article entitled "A Students' Register"), that my predecessor in the Deanship sent to the General Medical Council on November 30, 1938, lists of students of medicine who commenced professional study at the University of Liverpool in 1938.

Evacuation of Women and Children

Dr. ESTHER CARLING writes from Aylesbury: After a month of stocktaking, and hard thinking certain facts seem to emerge. (1) There is no criticism of the central idea that children should be protected; but (2) indiscriminate billeting can only be tolerated as a very temporary emergency measure; (3) the casting forth of mothers and children under 5 has been in the main a failure. Put these facts against the constantly reiterated Government plea that parents in evacuation areas should think again before rejecting the offer of safety. Then consider how the rural end of the problem can be adjusted to the Government's decision. First take the question of loyalties. Is the town mother in a danger zone to put her young children before her home and her husband? Can she wisely forgo the claim of the family as the unit? Had they not better stand or fall together? Must she accept the dictum, "Women and Children first?" That involves the further question, Are women human first or women first? If human theirs is the right to choose, but if their sex differentiation is their main function then they must have priority treatment. Population experts stress the value to the race of its women of child-bearing age, and in this way scientific research bears out the finding, "Women and children first." Doubtless the Government had this in mind in framing its schemes for the evacuation of mothers. The plan has failed not only from the incompatibility of town and country, or the difficulty of adjusting richer to poorer, clean to less clean, etc., but also because of the essential question, "What is my duty, where do I belong?" If country people are asked for a considered opinion they would stress the need for crêches or nursery schools as the solution for the youngest children. Then they will hear of prohibitive cost and will become uncomfortably conscious of their own unoccupied rooms. The value of such rooms has suddenly gone up. We who have them should be prepared to pay for them more highly than we have ever paid; they mean more to us. We have learnt by very uncomfortable contact how the other half of the world lives, and we have seen that the other half appreciates us as little as we appreciate them. Town mothers shot into the country are not grateful, and the rising tide of country resentment matches the objections of the unwilling guests. For the children, then, camps and crêches—cost us what they may. For the mothers let us think again, and at any rate respect their right to decide where and how their duty lies.

Examination by Medical Boards

Dr. J. AICKIN (Ferryhill), in reply to Dr. G. de Swiet's letter in the *Journal* of October 14 (p. 785), writes: If he will give the candidate a drink of cold water and wait a few moments he will have no difficulty in getting a sample. Some manage better if given the test glass and sent to the w.c. What I find to be a much greater difficulty is the number of men with impacted cerumen in one or both ears, making a view of the tympanum impossible. Syringing the ear will help, but it would be better if the candidate had this done by his own doctor before examination.

BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 4 1939

CLOSED INTRAPLEURAL PNEUMOLYSIS

BY

PETER W. EDWARDS, M.B., Ch.B.

AND

ALAN LYNN, M.D.

(From the Cheshire Joint Sanatorium, Market Drayton)

Artificial pneumothorax has been established for a number of years as a therapeutic measure in pulmonary tuberculosis. While there have been many successful results, there have also been many failures, associated for the most part with adhesions preventing the complete collapse of the diseased area of the lung. The operation of internal pneumolysis was devised by Jacobaeus to deal with adhesions of this character.

Between February, 1936, and December, 1937, 235 patients were operated on by one of us (P. W. E.): 260 operations were done on 255 pneumothoraces. The number of pneumothoraces exceeds the number of patients because in twenty patients with bilateral pneumothorax the operation was carried out on both sides. In five cases only was the operation done in two stages, though in four others a second stage was contemplated but not carried out, as thoracoscopy at a later stage showed that the remaining adhesions were completely inoperable.

TABLE I.—*Internal Pneumolysis, February, 1936, to December, 1937*

No. of patients	235	No. of operations, 260 :	
No. of pneumothoraces, 255 :		One-stage unilateral	210
(1) Unilateral	215	One-stage bilateral (20 patients)	40
(2) Bilateral (20 patients) ..	40	Two-stage unilateral (5 „)	10

Clinical Material

Of the patients operated on 50 per cent. were in a far advanced stage of the disease and 42 per cent. were advanced cases. While many of those with very extensive disease had responded to artificial pneumothorax and routine sanatorium treatment, some had failed to show such a response, and internal pneumolysis was carried out in these cases more or less as a last resort.

On admission to the sanatorium the patients were grouped according to the Ministry of Health classification, as follows:

TABLE II.—*Clinical Material (235 Cases)*

	No.	Per cent.
TB minus	16	7
TB + 1	2	1
TB + 2	99	42
TB + 3	118	50

Operative Results

The numbers and percentages given refer to artificial pneumothoraces.

TABLE III.—*Results in 255 Pneumothoraces*

Operative Result	No.	Per cent.
Complete	86	34
Partial	140	55
Inoperable	29	11

Complete : All the adhesions seen during the operation cauterized.
Partial : Some of the main adhesions cauterized wholly or partially.
Inoperable : The main adhesions deemed completely uncauterizable.

Complete division of adhesions was possible in only 34 per cent. Jacobaeus (1923) in his early cases obtained a complete collapse in 75 per cent., Chandler (1937) in 50 per cent., Gullbring (1934) in 73 per cent., and Anderson and Alexander (1937) in 37 per cent. The results reported by Jacobaeus, Chandler, and Gullbring were apparently obtained in cases selected as likely to be suitable for the operation, and show a high percentage of technical successes. On the other hand, Anderson and Alexander operated on 111 cases selected from 627 patients undergoing artificial pneumothorax treatment and obtained complete collapse in only 37 per cent. Alexander believes that less than 25 per cent. of patients undergoing artificial pneumothorax treatment are suitable for internal pneumolysis.

In the present series all patients undergoing artificial pneumothorax treatment were submitted for the operation with the exception of a few (less than 10 per cent.), for whom it would obviously have been futile. The results therefore suggest that complete collapse can be obtained by this method in over 30 per cent. of all cases of artificial pneumothorax. Adhesions were partially divided in 55 per cent. (Anderson and Alexander (1937), 41.4 per cent.) and were completely inoperable in 11 per cent. (Anderson and Alexander, 21.6 per cent.). Comparison of the results in this series of unselected cases with the results obtained by Anderson and Alexander in a selected series suggests that Alexander's estimate that less than 25 per cent. of all cases of artificial pneumothorax are suitable for the operation is much too low.

Radiological Result

The result is classified as "satisfactory" when the diseased area is fully collapsed and when cavities, if present before operation, are closed. "Improved, not satisfactory," indicates an improved but not complete collapse, and cavities, if present before operation, are not closed.

TABLE IV

Radiological Result	No.	Per cent.
Satisfactory	100	39
Improvement not satisfactory	35	14
Unaffected	71	28
Partial Symphysis	25	10
Obliterated	24	9
Total	255	100

X-ray films taken before operation were compared with those taken two weeks after operation and with subsequent films, in most cases six months after operation and in some up to nine and twelve months or longer. The radiological results are therefore based in most cases on a series of films, and not on films taken immediately before and after operation. Films taken immediately after operation were found to be misleading in estimating the degree of collapse, as even in inoperable cases they showed an improvement in the collapse chiefly in those parts of the lung in which there was little or no infiltration. This improvement was temporary. The results reveal that the collapse was improved radiologically in 53 per cent. and that the operation was unsuccessful in 47 per cent. in producing a better collapse.

TABLE V.—*Comparison between the Operative and the Radiological Result*

Operative Result	Radiological Result					
	No.	Satisfactory	Imp. not sat.	Unaffected	Partial Symph.	Oblit.
Complete	86	61 (71%)	12 (14%)	2 (2%)	7 (8%)	4 (5%)
Partial ..	140	39 (28%)	23 (16%)	42 (30%)	18 (13%)	18 (13%)
Inoperable	29	0	0	27 (93%)	0	2 (7%)
Total ..	255	100	35	71	25	24

The successful division of all the adhesions present does not always result in a radiologically satisfactory collapse. After complete division of adhesions, cavities still persisted in 14 per cent., and in 13 per cent. partial or complete obliteration of the pneumothorax followed. In 71 per cent. of pneumothoraces in which all adhesions were divided a radiologically satisfactory result was obtained. Where adhesions were partly divided, radiologically satisfactory results were obtained in 28 per cent., improved but not satisfactory collapse in 16 per cent., and partial or complete obliteration in 26 per cent.; the collapse was unaffected in 30 per cent. In the inoperable group the collapse was unaffected in 93 per cent. and the pneumothorax obliterated in 7 per cent. Partial or complete obliteration of the pneumothorax not infrequently follows the operation (19 per cent.). It is more likely to occur after partial division of adhesions (26 per cent.) than after complete division (13 per cent.).

Comparison is made in Table VI between the radiological result and the position of the principal adhesions remaining after partial cauterization. These adhesions were classified as follows: (1) *Medial subapical:* the apex of the lung below the clavicle with the adhesions to the mediastinum below the clavicle. (2) *Medial apical:* the apex of the lung above the clavicle with adhesions to the medial thoracic wall above the clavicle. (3) *Apical symphysis:* lung adherent to the pleural cupula. (4) *Lateral apical:* adhesions to the lateral thoracic wall above the second rib in the midclavicular line.

TABLE VI.—*Position of the Remaining Adhesions*

Radiological Result	Med. Subap.	Med. Apical	Apical Symph.	Lat. Apical	Others	Total
Satisfactory..	22	10	3	1	3	39
Improvement not satisfactory	0	13	8	2	0	23
Unaffected	0	5	33	1	3	42
Part. symph.	1	4	11	1	1	18
Obliterated	3	7	6	1	1	18
Total	26	39	61	6	8	140

As partial division of adhesions resulted in radiologically satisfactory collapse in 28 per cent. of cases it is of interest to note the position of the adhesions that were left undivided. In all cases in which medial subapical adhesions were left undivided a satisfactory collapse was obtained, except in four, in which partial or complete symphysis occurred. As these adhesions are usually attached to important mediastinal structures, their division is often difficult and dangerous. When difficulties arise in dealing with these adhesions and when the apex of the lung is below the clavicle they may be left undivided without interfering with the efficiency of the pneumothorax.

Satisfactory results were much less frequent when medial apical adhesions were left undivided. Of those in which a satisfactory collapse was obtained five had upper-lobe cavities below the level of the clavicle, and these closed after the division of lateral or lateral apical adhesions. In the remaining five there were no cavities before operation. In cases with cavities below the level of the clavicle the division of lateral or lateral apical adhesions may result in closure of the cavities even in the presence of an inoperable medial apical adhesion. Similarly, in cases in which an apical symphysis was left after operation the few satisfactory results followed the division of lateral or lateral apical adhesions where the cavities were below the level of the clavicle before operation. The division of such adhesions is therefore worth attempting.

TABLE VII.—*The Radiological Result in TB + 2 and TB + 3 Cases*

Classification	No. of A.P.s	Satisfactory		Imp. not sat.		Unaffected		Part. Symph.		Oblit.	
		No.	%	No.	%	No.	%	No.	%	No.	%
TB + 2	94	48	51	12	13	15	16	9	9	10	11
TB + 3	124	42	34	22	18	36	29	14	11	10	8

A satisfactory radiological result was more often obtained in TB + 2 cases (51 per cent.) than in TB + 3 cases (34 per cent.). The operation did not affect the collapse in TB + 2 cases in 16 per cent. and in TB + 3 cases in 29 per cent. Partial and complete symphysis occurred in similar proportions in TB + 2 and TB + 3 cases. As would be expected the more advanced the disease the less successful is the operation in producing satisfactory collapse, though advanced disease (TB + 3) does not contraindicate the operation, as it resulted in a satisfactory collapse in 34 per cent. of cases in this group.

TABLE VIII.—*Comparison between Temperature, before and Temperature after Operation*

Temp before Op.	No. of Ops.	%	Temperature after Operation							
			Transient						Prolonged	
			<99°		<100°		>100°		>100°	
			No.	%	No.	%	No.	%	No.	%
<99°	185	71	42	23	84	45	48	26	11	6
99°–100°	59	23	2	3	22	37	24	41	11	19
>100°	16	6	0	0	2	12	2	12	12	75
Total	260	100	44	17	108	42	74	28	34	13

Most of the operations were performed on patients without pyrexia (71 per cent.), of whom 23 per cent. had no reaction after the operation; transient reactions with pyrexia of less than 100° F. occurred in 45 per cent., and with pyrexia greater than 100° in 26 per cent.; in 6 per cent. prolonged pyrexia followed the operation. In the group with pyrexia between 99° and 100° before operation 3 per cent. were apyrexial, 37 per cent. had transient pyrexia of less than 100°, 41 per cent. had transient pyrexia greater than 100°, and 19 per cent. had prolonged pyrexia after operation. In the group with pyrexia greater than 100° before operation 75 per cent. had prolonged pyrexia greater than 100° after operation, and in most cases a more marked pyrexia than before operation, while in the remainder the temperature began to settle after the operation was performed.

Temperature reactions are more likely to occur and are more likely to be severe in cases with any degree of pyrexia, but as the operation was followed by a reduction in temperature in some of these cases, pyrexia does not contraindicate the operation in patients in urgent need of it.

Complications

TABLE IX.—*Complications (260 Operations)*

	No.	%		No.	%
(1) Perforation of Lung ..	6	2.3	(3) Pleural effusion*:		
(2) Haemorrhage:			(*a*) Transient	20	8.4
(*a*) Severe	1	0.4	(*b*) Persistent (TB −) ..	26	10.9
(*b*) Slight	6	2.3	(*c*) Persistent (TB +) ..	32	13.5
Total	7	2.7	Total	78	32.8

* Omitting twenty-three cases with effusion at time of operation, leaving a total of 237 operations.

Perforation of lung occurred in six cases (2.3 per cent. of operations), in five of which an unsuccessful attempt was made to release a cavity closely attached to the thoracic wall. In the sixth case a complete collapse was obtained after a very extensive cauterization.

Haemorrhage occurred in seven cases (2.7 per cent.). In six it was slight, and was easily controlled with the cautery at low heat. In one case there was an alarming haemorrhage. While working near the apex, blood suddenly covered the lens of the thoracoscope, and several attempts to find the bleeding-point failed. As the patient was becoming collapsed, the cannulae were withdrawn and the head of the bed tilted down. Routine treatment for haemorrhage and shock resulted in recovery, though a temperature reaction lasted many weeks. The pneumothorax was maintained with difficulty, as partial symphysis took place.

Small amounts of fluid in the costo-phrenic angle are common in artificial pneumothorax. A pleural effusion is therefore defined as any quantity of fluid sufficient to cover the diaphragm in the upright position, and all cases with this amount of effusion or more at the time of operation are omitted. Effusions are divided into three classes: (1) transient —those which disappear in a few weeks; (2) persistent (TB −) —those which slowly or rapidly increase and in which tubercle bacilli were never found; (3) persistent (TB +)—as (2), but in which tubercle bacilli were found.

In this series of operations effusions occurred in 32.8 per cent, 8.4 per cent. being transient and 24.4 per cent. persistent. Owing to the lack of a definition of what constitutes an effusion in much of the published work on this subject, it is difficult to compare these figures with those of others. Jacobaeus (1933) in an early series of cases found effusions after operation in 52 per cent., Chandler (1937) in 39 per cent., Anderson and Alexander (1937) in 33.3 per cent., Matson (1935) in 50 per cent., and Brock (1938) in 35.5 per cent. (including 22.5 per cent. classified as "very small amount").

Tuberculous effusions followed the operation in 13.5 per cent. Chandler (1937) had tuberculous empyema in 1.9 per cent., Anderson and Alexander (1937) in 3.6 per cent., and Brock (1928) in 1.4 per cent. of cases. These authors do not state what bacteriological methods were used in examining specimens of fluid for tubercle bacilli. In the present series all specimens were examined by direct film and culture on Loewenstein medium.

TABLE X.—*Comparison between the Radiological Result and the Incidence and Type of Effusion (omitting Inoperable Cases and those with Effusion at Operation)*

Type of Effusion	Radiological Result											
	Operations		Satisfactory		Imp. not satis.		Unaffected		Part. Symph.		Oblit.	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Nil	137	64	72	52	26	19	31	23	3	2	5	4
Transient ..	19	9	13	68	2	11	1	5	2	11	1	5
Persist. TB − ..	26	12	6	23	2	8	7	27	4	15	7	27
Persist. TB + ..	31	15	4	13	3	10	4	13	14	45	6	19

Transient effusions had apparently little or no adverse effect on the result of the operation. Satisfactory results in the presence of a transient effusion (68 per cent.) were slightly more frequent than in cases in which no effusion occurred (52 per cent.), but with transient effusions partial symphysis was also more frequent (11 per cent.) than in the absence of an effusion (2 per cent.). Persistent effusions had a definitely adverse effect on the result of the operation. Satisfactory results were much less frequent (for TB negative effusions 23 per cent. and for TB positive effusions 13 per cent.), and the increased incidence of partial symphysis and obliteration was striking, being most marked in TB positive effusions. A persistent effusion is therefore a complication that is likely not only to render the operation valueless but may also lead to the obliteration of a pneumothorax, which, though partial, may nevertheless be of use in some cases.

In view of the disastrous effects of persistent effusions on the results of the operation the relation between the incidence and type of effusion and the severity of the disease (as shown by the Ministry of Health classification), the degree of pyrexia at the time of operation, the sedimentation rate before operation, and the extent of tissue cauterized were investigated. The results are shown in Tables XI to XIV.

TABLE XI.—*Incidence and Type of Effusion in TB + 2 and TB + 3 Cases*

Classification	No. of Ops.	Incidence of Effusion		Type of Effusion					
				Transient		Persistent TB −		Persistent TB +	
		No.	%	No.	%	No.	%	No.	%
TB+2 .	84	25	30	10	40	8	32	7	28
TB+3 ..	116	46	40	9	19	15	33	22	48

As would be expected the incidence of effusion is greater in TB + 3 cases than in TB + 2 cases. In addition, in TB + 3 cases persistent effusions are more common and transient effusions less common than in TB + 2 cases. Thus in TB + 3 cases effusions are not only more frequent than in TB + 2 cases, but persistent effusions which have often been shown to lead to partial symphysis or obliteration of the pneumothorax are the most common type to occur in this group of cases.

TABLE XII.—*Comparison between the Temperature before Operation and the Incidence and Type of Effusion after Operation (omitting Cases with Effusion before Operation)*

Temp. before Operation	No. of Ops.	Effusions		Type of Effusion					
				Transient		Persistent TB −		Persistent TB +	
		No.	%	No.	%	No.	%	No.	%
<99° ..	168	47	28	18	38	15	32	14	30
99°–100° ..	55	23	42	2	9	10	43	11	48
>100° ..	14	8	57	0	0	1	12	7	88

In patients without pyrexia at the time of operation not only were effusions less frequent than in those with any degree of pyrexia, but effusions of the persistent type were also less frequent. Even with slight pyrexia effusions were much more common (42 per cent.), and of these over 90 per cent. were persistent. With more marked pyrexia, effusions occurred in almost 60 per cent., and of these 88 per cent. were persistent TB +. It must be remembered, however, that the pyrexial TB + 3 case is the one likely to form an effusion without internal pneumolysis. Consequently, though it is desirable to await a fall in temperature in these cases, careful scrutiny should be maintained lest an effusion form and make internal pneumolysis impossible. A clinical estimate is necessary before performing the operation.

TABLE XIII.—*Comparison between the Sedimentation Rate before Operation and the Incidence and Type of Effusion after Operation (omitting Cases with Effusion before Operation)*

S.R. before Operation	No. of Ops.	Effusions		Type of Effusion					
				Transient		Persistent TB –		Persistent TB +	
		No.	%	No.	%	No.	%	No.	%
Slow ..	73	18	25	10	56	6	33	2	11
Moderate ..	120	38	32	9	24	15	39	14	37
Rapid ..	44	21	48	1	5	5	24	15	71

In patients with slow sedimentation rates at the time of operation effusion occurred in 25 per cent., and of these 56 per cent. were transient and 44 per cent. persistent; whereas, with rapid sedimentation rates, effusions followed cauterization in 48 per cent., of which 95 per cent. were of the persistent type and 71 per cent. were TB positive. As with temperature, delay is desirable before operating if sedimentation is rapid. Only operations urgently necessary should be undertaken in patients with a rapid sedimentation rate—for example, adhesions holding a cavity with evidence of bronchogenic spread in the other lung.

TABLE XIV.—*Comparison between the Extent of Cauterization and the Incidence and Type of Effusion (omitting Cases with Effusion before Operation)*

Extent of Area Cauterized	No. of Ops.	Effusion		Type of Effusion					
				Transient		Persistent TB –		Persistent TB +	
		No.	%	No.	%	No.	%	No.	%
Small ..	36	10	28	5	50	2	20	3	30
Moderate..	127	47	37	13	28	16	34	18	38
Extensive ..	52	21	40	2	10	8	38	11	52

Where only a few small adhesions were cauterized, effusions occurred in 28 per cent., of which 50 per cent. were transient. The incidence of effusions was much the same after moderate and after extensive cauterization, but in the extensive group there is a much greater incidence of persistent effusion of the TB + type.

It is obvious that advanced disease or any degree of pyrexia or a rapid sedimentation rate is associated with a greatly increased tendency to fluid formation, and particularly to tuberculous empyema. In the presence of any or all of them the possible benefits of the operation must be very carefully weighed against the greatly increased possibility of tuberculous effusions, and especially where an extensive cauterization is likely to be needed.

Radiology in estimating Suitability of Adhesions for Cauterization

Experience with the thoracoscope has shown that with the present methods of radiological examination it is impossible accurately to localize adhesions or to estimate their number and extent or their suitability for cauterization. Radiological shadows which suggest cord-like adhesions are often found at thoracoscopy to be sheets of adhesions, many of which may also be hidden by visible adhesions or by the lung, or may be too thin to show on an ordinary film. In this series an attempt was made to estimate the suitability of adhesions for cauterization by examining antero-posterior films taken before operation. Only those cases in which the greater part or the whole of the apex of the lung appeared radiologically to be directly adherent to the thoracic wall were considered inoperable. The figures given show the result of attempting to cauterize adhesions which, on radiological evidence, appeared to be inoperable owing to the presence of an extensive apical symphysis.

TABLE XV.—*Operative and Radiological Results in Cases with an Apical Symphysis Radiologically before Operation*

Radiological Result	Operative Result				
	Complete	Partial	Inoperable	Total	
				No.	%
Satisfactory	Nil	2	0	2	4
Improvement not satisfactory..	Nil	3	0	3	7
Unaffected	Nil	14	16	30	65
Partial symphysis	Nil	4	0	4	9
Obliterated	Nil	6	1	7	15
Total	Nil	29 (63%)	17 (37%)	46	100

In every case the radiological diagnosis of an apical symphysis was confirmed at operation. It was not possible in any of the cases to free the apex completely. Satisfactory results were obtained in only two instances. In these there were cavities in the middle third of the lung; they were collapsed after division of adhesions to the thoracic wall above the level of the cavities. In three cases there was some improvement of the collapse with diminution in the size of the cavity following division of the outer part of the symphysis.

In many cases the area of lung closely adherent to the thoracic wall at the apex was found at operation to be much greater than it appeared to be radiologically. In several instances there was a symphysis from apex to base posteriorly, though radiologically the symphysis seemed to be confined to the apex. In every case in which the cavity was situated close to the apex the operation had no appreciable effect, even when lateral apical adhesions were successfully divided.

Discussion

Here are reported the results of internal pneumolysis in an unselected series of cases of pulmonary tuberculosis undergoing treatment by artificial pneumothorax. The indication for the operation was the presence of adhesions over the diseased area of lung, and in most cases these were associated with uncollapsed cavities. The decision as to the suitability of adhesions for cauterization depended on a thorascopic examination, though in a few cases the size and position of the pneumothorax in relation to the diseased area showed that thoracoscopy would be valueless or impossible, and accordingly they were not submitted to the operation. Apart from these few cases there was no selection, and the results show the value of the operation of internal pneumolysis in unselected cases of artificial pneumothorax.

The figures given reveal once again the deplorable fact that 50 per cent. of patients treated by artificial pneumothorax were classified TB + 3, and that even in this unpromising material a satisfactory collapse was obtained in 34 per cent., though the incidence of effusions in this group was much greater than in patients with less advanced disease. In TB + 2 cases a satisfactory collapse resulted in 51 per cent.

All adhesions were completely divided in 34 per cent. of pneumothoraces, and radiological examination of these showed a satisfactory collapse in 71 per cent. Complete cauterization of adhesions, therefore, does not always result in a satisfactory collapse, this being due in some cases to effusion, and in others to thick-walled cavities, which in spite of complete relaxation do not close. In 55 per cent. only partial division of adhesions was possible, and of these 28 per cent. showed a satisfactory collapse radiologically.

After partial cauterization it has been found that the position of the remaining adhesions and their relation to cavities have an influence on the efficiency of the collapse. In some positions adhesions are more likely to interfere with efficient collapse than in others. Where the apex of the lung has dropped below the clavicle, medial subapical adhesions do not prevent the closure of cavities in the upper lobe. These adhesions are usually attached to important structures in the superior mediastinum, and access to them is often difficult; cauterization, too, is dangerous in this area. Such adhesions may be left undivided unless they can be dealt with easily and safely. Medial apical adhesions are important, and should be divided if possible. They may be left, if access is difficult, where a cavity well below the clavicle is held by lateral adhesions that can be cauterized. Edwards and Stevens (1938) found that 42.3 per cent. of cavities uncollapsed by artificial pneumothorax closed after phrenic evulsion, and probably this operation is more effective in the presence of medial apical adhesions than any other type. An apical symphysis is usually inoperable, though parts of such adhesions are sometimes divisible. This, however, does not lead to any obvious improvement in the collapse and may result in the weakening of the walls of an adjacent cavity with perforation of the lung. Cauterization of lateral adhesions in the presence of an apical symphysis has no effect on apical cavities, but may result in closure of cavities below the level of the clavicle.

Apart from effusions there were few complications, though perforation of the lung occurred in 2.3 per cent. In one case (0.4 per cent.) there was a severe intrapleural haemorrhage, and the patient recovered after routine treatment for shock and haemorrhage. Small haemorrhages (2.3 per cent.) were easily controlled by applying the cautery at low heat to the bleeding-point. Varying degrees of surgical emphysema occurred in many cases, and in six it was severe, extending to the neck and abdominal wall. Apart from discomfort to the patient, no ill effects resulted. Mediastinal emphysema was not observed.

Pleural effusion was the most frequent complication, occurring in 32 per cent., excluding cases with effusion at the time of operation. Transient effusions followed the operation in 8 per cent., and persistent effusions in 24 per cent., more than half of which contained tubercle bacilli. Transient effusions had little or no effect on the result of the operation. Persistent effusions, and especially those containing tubercle bacilli, had a definitely adverse effect on the result of the operation, in many cases resulting in partial symphysis or obliteration of the pneumothorax.

In view of the adverse effects of effusions various factors likely to influence the production of effusions were investigated. Effusions, and especially TB + effusions, were much more common in TB + 3 cases. Tuberculous effusions were also more frequent in patients with any degree of pyrexia or a rapid sedimentation rate, or those in whom an extensive cauterization was performed. In dealing with such patients, therefore, the possible advantages of the operation should be carefully weighed against their much greater liability to effusions.

Radiological examination is unreliable in estimating the suitability of adhesions for cauterization; but if there is definite radiological evidence of an apical symphysis with an apical cavity the chances of a successful division of adhesions is extremely remote, and in these cases thoracoscopy is unnecessary. It is advisable, however, to make use of films of higher penetration than is customary in chest radiology, as films of the usual density may show what appears to be an apical symphysis, but which with a film of higher penetration is a series of separate adhesions. In a certain number of cases with upper lobe adhesions stereoscopic films of the upper half of the collapsed side were taken. While these were definitely more reliable than ordinary films in estimating the extent and position of adhesions, they were not accurate enough to warrant their use as a routine.

The age of the pneumothorax at which internal pneumolysis is performed is said by some authorities to influence the incidence of effusion and the success of the operation. In this series of cases the first 121 pneumothoraces were induced from three to nine months before the operation was performed. In this group complete collapse was obtained in 32 per cent., a radiologically satisfactory collapse in 44 per cent., effusions occurred in 37 per cent., and tuberculous effusions in 13.5 per cent. In the remaining cases the pneumothorax was induced eight to ten weeks before operation. Collapse was complete in 34 per cent., radiologically satisfactory in 35 per cent., effusions occurred in 29 per cent., and tuberculous effusions in 13.5 per cent. Operation more than three months after induction resulted in the division of all adhesions in the same percentage of cases as in those in which the operation was performed within three months of induction, but with a greater proportion of satisfactory radiological results. Effusions were more common in the former group, though the proportion of tuberculous effusions was the same in each. As these groups are probably not strictly comparable in other respects, it is doubtful if the slight differences observed in the results of the operation are significant; there is therefore no definite evidence to suggest that the age of the pneumothorax at which internal pneumolysis is performed, within the age limits stated, has any influence on the success of the operation or the incidence of effusions.

It has been suggested by several authors that the length of the operation has some influence on the result and should be limited to one hour. The extent of the area cauterized appears to have some relation to the incidence of effusion, but it seems unlikely that the time factor alone has any definite relation to the incidence of effusions. It is more probable that the amount of tissue destroyed by cauterization, together with the state of the pleura, is of more significance than the duration of the operation. The amount of tissue destroyed by the cautery in a given time may vary greatly in different patients, depending largely on the technical difficulties encountered, and, in addition, second and third sessions add to the risk of complications. The length of the operation is therefore not a safe guide in deciding on the necessity for a second session, and this should depend rather on the state of the pleura, the extent of the area cauterized, and the technical difficulties, together with the clinical condition of the patient and the sedimentation rate, always bearing in mind the added risk of later sessions.

Double Artificial Pneumothorax

In this series of twenty cases thoracoscopy was performed on the one side before attempting the artificial pneumothorax on the other. As many of these patients were acutely ill the reaction was severe. In the last twenty-nine cases of double artificial pneumothorax this fact has been taken into consideration. If a patient is in good or relatively good condition the thoracoscopy is performed on the one side before inducing the other. If, however, there is a very rapid sedimentation rate, high temperature, or other signs of an acute process in cases in which absolute bed rest alone has failed to reduce toxaemia, thoracoscopy has been postponed and the contralateral side induced at once. The main objection to this procedure is that these cases are liable to pleural effusion. Further, in the very acute cases with much destruction of lung, a phrenic evulsion is performed before doing a thoracoscopy, and this has often resulted in lessening the toxaemia.

Phrenic Evulsion and Thoracoscopy

Normally in cases suitable for a phrenic evulsion this is best performed after the thoracoscopy, as patients with a phrenic evulsion occasionally become short of breath during a thoracoscopy. However, in some cases of artificial pneumothorax with numerous adhesions and only a linear collapse, and where it is impossible to introduce a trocar for thoracoscopy, a phrenic evulsion will result in enough relaxation to permit a thoracoscopy with relative ease. Lastly, in cases of marked toxaemia the phrenic operation may be performed before thoracoscopy.

Summary and Conclusions

The results of internal pneumolysis in an unselected group of 235 cases, in 50 per cent. of which the disease was far advanced, are reported, including twenty with bilateral artificial pneumothorax.

Division of all adhesions was possible in 34 per cent. of pneumothoraces operated on, and partial division in 55 per cent.; 11 per cent. were inoperable.

Radiologically satisfactory results were obtained in 39 per cent., 14 per cent. were improved but not satisfactory, 28 per cent. were unaffected, and in 19 per cent. partial or complete symphysis followed the operation.

In the group of 140 pneumothoraces in which only partial division of adhesions was possible, a satisfactory collapse followed the operation in 28 per cent.

Medial subapical adhesions rarely interfere with efficient collapse where the apex of the lung is below the clavicle in the upright position.

Lateral or lateral apical adhesions may be usefully divided in patients with inoperable medial apical adhesions or apical symphysis in the presence of patent cavities below the level of the clavicle.

Satisfactory results were most frequent with limited lesions in apyrexial patients.

Apart from effusions, complications were rare. Following 260 operations, effusions occurred in 32.8 per cent. of operations (8.4 per cent. transient, 10.9 per cent. persistent TB negative, 13.5 per cent. persistent TB positive). Transient effusions did not materially affect the result of the operation. Results were poor where the operation was followed by persistent effusions, particularly those in which tubercle bacilli were present and the incidence of partial or complete obliteration was high.

Effusions were most common in cases with advanced disease, any degree of pyrexia, rapid sedimentation rates, or in cases where extensive cauterization was carried out. Consideration of the first three of these factors is of importance in estimating the probability of effusion following the operation.

The radiological diagnosis of an inoperable apical symphysis in forty-six cases was confirmed by thoracoscopy. Apart from this group, radiological examination was unreliable in determining the position or extent of the adhesions present. Stereoscopic examination was more reliable than fluoroscopy and antero-posterior films, but was not of enough value to warrant routine use.

Facilities for intrapleural pneumolysis are essential for the proper conduct of artificial pneumothorax treatment, and the operation may be of value even in advanced cases.

The place of double artificial pneumothorax and phrenic evulsion in intrapleural pneumolysis is indicated.

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Disturbances of Epiphysial Ossification.—The hip-joint is the site at which hereditary disturbances of epiphysial ossification may most often be found, but any epiphysis in the body may be affected. The condition has to be differentiated from Perthes's disease and allied abnormalities, but the non-traumatic form of osteochondritis dissecans is thought by the author to be closely related to it.—Multiple Hereditary Disturbances of Epiphysial Ossification. W. Müller.—*Z. Orthop.*, May 30, 1939, **69**, 257.

LABORATORY METHODS IN THE DIAGNOSIS AND CONTROL OF FEVERS OF THE ENTERIC GROUP*

BY

J. S. K. BOYD, M.B., Ch.B., D.P.H.
Lieutenant-Colonel R.A.M.C.

In a very brief paper such as this it is impossible to do more than touch on a few of the principal points in which progress has been made in diagnosing and controlling fevers of the enteric group. To those who practise at home it may seem that the existing methods of laboratory diagnosis are adequate and satisfactory, but unfortunately in subjects who have been inoculated with typhoid-paratyphoid vaccine—and this includes practically all Europeans living over-seas—the usual serological tests give very equivocal and unreliable results. In the accompanying table the figures for the British and Indian Armies for the last ten years are shown. The cases classified as "enteric group" have been diagnosed on serological or clinical grounds, and there is good reason to believe that a considerable proportion of them are not true enteric group fevers. It is unlikely that there will be any notable increase in the number of cases diagnosed by cultural methods; for, in the Army, blood culture as well as faeces and urine culture is pursued relentlessly. In outbreaks of typhoid or paratyphoid fever, isolations are made from practically 100 per cent. of the cases: the enteric group cases in the table are mainly sporadic cases, in many of which the diagnosis has been made because nothing else seems to apply. It is obvious that a serological test capable of giving reliable positives and negatives would be of the greatest value.

Table showing Incidence of Enteric Group Fevers in the Army in India (British and Indian Troops Combined)

		1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
Typhoid	Cases	227	293	200	176	161	137	105	82	43	42
	Deaths	33	41	21	25	21	26	16	16	5	?
Para A	Cases	45	58	68	64	67	52	53	59	27	25
	Deaths	—	—	1	3	1	1	—	3	—	?
Para B	Cases	18	9	6	10	10	3	4	1	2	2
	Deaths	—	—	—	—	—	—	—	—	—	?
Para C	Cases	4	12	9	4	1	3	3	—	1	
	Deaths	—	2	1	—	—	—	—	—	—	
Enteric Group	Cases	264	237	218	240	205	222	148	128	80	55
	Deaths	12	9	9	11	10	10	6	3	3	?
Total	Cases	558	609	501	494	444	417	313	270	153	124
	Deaths	45	52	32	39	32	37	22	22	8	?

The usual agglutination test made with suspensions of H or flagella antigen, eminently successful in the uninoculated, has now been completely given up in the military laboratories of India, for it has been conclusively shown that, in subjects inoculated with typhoid-paratyphoid vaccine, febrile conditions other than enteric group fevers produce an anamnestic rise of agglutinins not to be distinguished from that given by enteric infection. Routine tests are now being performed with suspensions of O antigen. These are undoubtedly more specific in their indications, being less influenced by the stimulus of non-enteric infections. Unfortunately the response is somewhat sluggish, and with Dreyer's technique many proved cases fail to show a diagnostic rise in agglutinin. Trials are now in progress using the more delicate technique advocated by Felix, and the results obtained to date give reason for hope that more reliable information will be forthcoming from this test.

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* Read at a joint meeting of the Sections of Services and Tropical Medicine and Public Health at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

The Vi Agglutination Test

The most recent method of serological diagnosis, which applies at present only to typhoid and not to paratyphoid infection, is a test for the presence of agglutinins for the virulence or Vi antigen, first described in detail by Felix. This test has a more complicated technique owing to the instability of the antigen. The original and probably the most delicate method of performing the test is with suspensions of living organisms, but difficulties in standardization and in reading the results make this a method for the expert. An alternative technique has been provided by the discovery of strains of *typhosum* which are devoid of H and O antigen and possess only Vi antigen. Preparations of such strains can be preserved by formalin without losing their properties, and in this way standardized suspensions can be prepared and issued from a central laboratory.

The Vi agglutination test was first used by Felix for the detection of carriers. In fifty-six chronic carriers he found Vi agglutinins present in every case, although in forty-seven the titre was 1 in 20 and under: with few exceptions all controls were negative. I am indebted to my colleague Major H. J. Bensted, *M.C.*, R.A.M.C., for some data, not yet published, on the results of this test carried out at the Enteric Laboratory, Kasauli, India. In the small number of permanent carriers which were investigated, appreciable amounts of Vi antibody were found in every case. In temporary and convalescent carriers, however, approximately half the cases failed to show Vi agglutinins despite the fact that the organisms were readily recovered from the stools. It would therefore appear that this test is likely to be of great assistance in detecting permanent carriers, but cannot be trusted to give a reliable negative in the routine examination of convalescents before discharge from hospital.

More recently Bhatnagar has applied this test to the diagnosis of cases of typhoid fever, and claims to have obtained an easily detected response in inoculated subjects and a less obvious result in uninoculated natives. The Vi agglutinins appear early and disappear quickly. Bensted, in investigating cases of typhoid fever proved by isolation of the organism, found that about 25 per cent. failed to show any Vi agglutinin when examined at short intervals beginning at the seventh day. In a small number of cases serum was obtained between the first and fifth days: in all of these Vi agglutinin was demonstrated in appreciable amounts. It would therefore appear that this test may be of considerable diagnostic value in the early days of the disease, and further investigations along these lines are being carried out.

Typing with the Vi Bacteriophage

In the realm of epidemiology a notable and important advance has recently been made by Craigie in the discovery of bacteriophage which has a specific action on virulent strains of *Bact. typhosum* (Kauffmann's V forms). Craigie has described four serologically different bacteriophages, and of these one, Type II, is of particular importance from the point of view of epidemiology. This phage has the property of becoming conditioned to the particular strain of *Bact. typhosum* on which it is propagated. Thus if it is propagated for some generations on the Rawlings strain it acquires a high titre for this strain, but shows a low titre for another well-known strain, Ty 2. If this same phage is now propagated for some generations on Ty 2 the position is reversed: it develops a high titre for Ty 2 and loses in large measure its power to lyse Rawlings. Extending these observations over a large number of strains, Craigie has differentiated at least thirteen phage-types of *Bact. typhosum*, some common, some rare, for each of which he has prepared a specific bacteriophage. He has also encountered a small number of strains, probably intermediate between virulent and non-virulent forms, which cannot be typed in this way. These he names "imperfect V forms."

Once the different conditioned phages are available it is a simple matter to type any strain of *Bact. typhosum*. To observe the action of the bacteriophage, a loopful of young broth culture of the organisms to be tested is spread with a standard platinum loop over an area the size of a sixpence on an agar plate. When this has dried, a drop of phage, also from the standard loop, is placed without spreading in the centre of this patch and allowed to dry. The plate is then incubated for two hours, stored in the cold room overnight, and reincubated next day. The results will be obvious in from four to six hours, and may show either a complete confluent patch of lysis the size of a drop of phage or varying numbers of small discrete plaques, or absence of any obvious lysis. For test purposes each of the different phages is carefully titrated and diluted to the strength which against its homologous type will just give a confluent patch of lysis. This "critical test dilution" usually lies between strengths of 1 in 100 and 1 in 10,000 of the original phage, and has little or no action on heterologous types—at most it produces an occasional pinhead plaque which need cause no confusion.

To type an unknown strain a series of patches are sown, from a young broth culture, on an agar plate. These are spotted separately with the different type phages, and incubated as described. A disk of lysis is produced by the phage of the type to which the strain belongs. The phages used are phage I (a polyvalent phage not hitherto mentioned, included to confirm that the strain under test contains Vi antigen) and phage II B_2, C, D_2, E_2, F_2, G, H, and J. Phage A is omitted, as *typhosum* Type A is equally susceptible to the action of all phages. Phages B_2, D_2, E_2, and F_2 act equally on Types B_1, D_1, E_1, and F_1 respectively. If the strain being tested is lysed by one of these phages it must be further tested with phage B_1, D_1, E_1, and F_1, as the case may be: these are strictly specific for their homologous types. Imperfect V forms will be lysed by phage I and imperfectly by some of the phage II types. W forms will show no lysis at all.

Accumulating experience goes to show that the phage type of a strain is a permanent character, unaffected by passage through the human being, by artificial passage through laboratory animals, or by artificial culture. Thus the Ty 2 and Rawlings strains, which are in use in various parts of the world, have proved to be Types E and F respectively, wherever tested. The Rawlings strain now used at the Royal Army Medical College has been passed through mice on innumerable occasions, and still remains F; while in outbreaks of typhoid fever the organisms recovered from all cases prove to be alike, and repeated isolations from the same case are also of one type, although occasionally imperfect V forms and W forms may be recovered from a case which also shows V forms of a definite type. This, of course, is a quantitative and not a qualitative difference in antigen.

Applications of the Bacteriophage Test

The applications of this test are manifold. It affords evidence which may either link up on a suspected carrier with an outbreak or may disprove his connexion with it. Thus the strain which caused the Croydon outbreak was Type D. The carrier suspected of having fouled the water supply which spread the infection also harboured an organism of Type D.

Recently the laboratory assistant of a colleague, who is engaged in the preparation of typhoid-paratyphoid vaccine, developed typhoid fever twelve days after he returned from leave. The question of laboratory infection naturally arose. The strains in use in the laboratory were Rawlings and Watson (F), Ty 2 (E), and a strain called Giglioli, which proved to be A. The strain recovered from the attendant was C, thus proving that the infection had not been acquired in the laboratory, but was probably picked up while he was on leave.

A short time ago an outbreak occurred in Birkenhead which was traced to an infected milk supply; but one case, occurring under rather different circumstances, could not be fitted into this picture. The associated cases of the outbreak proved to be caused by Type E. The anomalous case harboured Type D, thus confirming that it was a sporadic case of different origin.

In commenting on Craigie's work an annotation in the *British Medical Journal* (1938, **2**, 1212) suggested that his methods were unlikely to come into common use, presumably in the belief that the test was very intricate. This is far from being the case, and I hope that the remarks I have made and the demonstration I have put out will dispel this idea and will show that the test is simple and the results refreshingly clear-cut.

To summarize, we have in the Vi agglutination test a promising method of detecting permanent carriers, and in Vi bacteriophage an extremely delicate and accurate means of studying certain aspects of the epidemiology of the disease.

The Joint Committee set up under Subsection (1) of Section 4 of the Therapeutic Substances Act, 1925, has made further regulations (Statutory Rules and Orders, 1939, No. 1395). These Therapeutic Substances Amendment Regulations, 1939, come into operation on December 1 next. They require every holder of a licence to manufacture therapeutic substances, who for any purpose engages in the culture or manipulation of pathogenic spore-bearing micro-organisms, to provide separate laboratories and utensils and apparatus for the culture or manipulation of such micro-organisms. These laboratories and appliances are not to be used for the manufacture of any other therapeutic substance. Part I of the attached schedule lays down provisions applicable to tetanus toxoid, and Part II provisions applicable to gas-gangrene antitoxin. Tetanus toxoid is defined as "tetanus toxin (the sterile filtrate from a culture on nutrient broth of *Clostridium tetani*) the specific toxicity of which has been completely removed by the action of chemical substances in such a manner that it retains efficient properties as an immunizing antigen. Its proper name is 'tetanus toxoid.'" Gas-gangrene antitoxin is defined as "the serum, or the antitoxic globulins, separated from the blood of animals which have been immunized against the specific toxin prepared by the growth of *Clostridium histolyticus* in a fluid medium. The proper name of the substance is 'gas-gangrene antitoxin (histolyticus).'"

CANCER: A CONSIDERATION OF CURABILITY AND OF THE ROLE OF RADIOTHERAPY IN TREATMENT*

BY

RALSTON PATERSON, M.D., F.R.C.S., F.F.R.

(From the Christie Hospital and Holt Radium Institute, Manchester)

The main purpose of this paper is to try to analyse the part which radiotherapy is capable of playing in the treatment of malignant disease, and to consider certain of its limitations. The term "radiotherapy" should be used to include both radium and deep x-ray therapy; to obtain maximum efficiency of treatment policy these agents must be in the same hands. In particular I feel that the respective fields of surgery and radiotherapy—and these two between them remain the only available methods of curing cancer—are much better defined than is generally supposed. Analysis of the proper part which each should play is therefore practicable. Certain of the ideas which I propose to lay before you were suggested by study of a most interesting Ministry of Health publication, "Cancer: An Inquiry into the Extent to which Patients receive Treatment," by Sholto Mackenzie.† I shall have occasion to make frequent reference to that report.

The best approach to the main theme of the role of radiotherapy in malignant disease seems to require as preliminary some consideration of the more basic questions of the extent to which malignant disease is normally curable by any means; to what extent it calls for some treatment even though not necessarily curative in intent; and, lastly, the extent to which in spite of all our knowledge and accomplishments of the last twenty-five years cancer is still a hopeless disease. In Mackenzie's report the subject was approached from the completely objective standpoint of finding out the extent to which certain types of cancer were in fact receiving treatment in this country to-day, as assessed from a detailed analysis of all the cancer deaths in a number of sample areas, no account being taken of possible cured cases. It seemed to me, however, that collateral evidence of value could be built up from a rather more subjective point of view by considering how far the various methods and technical facilities at our command have been proved in practice to be effective or otherwise in dealing with each of the known types of malignant disease.

This subjective survey shows that for each disease type the many manifestations of malignancy fall into groups so near those proposed by Mackenzie that I have taken his three groups as a satisfactory index of the present-day state of affairs. These three groups are shown in Tables I, II, and III. It must be noted that the percentages shown on these tables are not results of treatment, but are the percentages of all cases of registered cancer deaths in the sample communities tested which were found to have received treatment. For his analysis Mackenzie took "treatment" to mean treatment of practically any sort, except palliative surgery, undertaken at any hospital or nursing home, and made no attempt to judge of its efficiency.

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* Paper read to the Section of Surgery at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

† Reports on Public Health and Medical Subjects, No. 89.

TABLE I.—"*Curable*" *Malignant Disease: Percentage treated*

Uterus, body and cervix, and vagina	56%
Skin, including genitalia	64%
Breast	68%
Mouth, tongue, etc., and lip	71%

The lesions in Table I are called the "curable" diseases in that not only has statistical survey shown that these four conditions can be cured in a worthwhile percentage of cases treated, but experience shows that where adequate treatment facilities exist they are being cured in an appreciable percentage of all cases occurring. Even this is using the word "curable" in a very limited sense when we find that such percentage is somewhere in the region of 25 to 30, and Sholto Mackenzie is only willing to call them "the treatable cancers." Later it will be necessary to emphasize that in this group the general curability is associated with such a high cure rate in the early stages that these four diseases in such early stages can genuinely be called curable even by the standards of other diseases.

The striking fact about these lesions is that they are accessible cancers, diagnosable either on sight or by palpation, and that they require no elaborate or technical means of diagnosis.

TABLE II.—"*Treatable*" *Malignant Disease: Percentage treated*

Stomach	5%	Bladder	29%
Intestine	8%	Ovary	29%
Prostate	18%	Larynx	39%
Rectum	20%	Miscellaneous	42%

Table II presents a longer series, the common characteristic of which is that permanent cure can only be expected in a small percentage of all cases. They are, however, "treatable" diseases in one of three ways. From the surgical point of view certain of them can be labelled "treatable" in the sense that if fortunate enough to be explored in their really early stages they *can* be successfully cured by surgical excision. From the radiological point of view they are treatable in the same sense that a small fraction of the early cases can be cured. Thirdly, they are treatable by radiological methods in another sense altogether—namely, that the majority of cases call for the use of radiation as a palliative agent. It must be realized that the fraction of the total cases occurring which would be cured would still remain comparatively low even were full use made of all present-day diagnostic facilities. It is indeed somewhat of a shock to realize for the first time the extent to which this is the case for so many common cancers, but no good purpose is served by ostrich tactics. Had I not been following the Mackenzie grouping, there would have been some temptation to place carcinoma of the rectum in the first group because of its 20 to 25 per cent. curability by operation; but, even so, this means but little when four out of five cases are inoperable when first seen. Even this dubiety hardly exists, however, in the other lesions. The subject of carcinoma of the stomach, for instance, an extremely common lesion, was discussed at length at the British Empire Cancer Campaign Informal Congress two years ago, and the outstanding impression left by a frank discussion was that, even considering only treated cases, the long-term survivals in this disease represented a negligible fraction.

TABLE III.—"*Incurable*" *Malignant Diseases: Percentage treated*

Liver	0%	Gall-bladder, etc.	10%
Pancreas	1%	Mediastinum	14%
Lung and bronchus	5%	Oesophagus	21%

Table III lists those lesions in which we can still offer so little that we are forced to admit the label "incurable," and to realize that treatment even from a palliative point of view is largely only of psychological value. Again, if making a list *de novo* one might be tempted to pass carcinoma of the oesophagus and perhaps of the mediastinum upwards into the "treatable" group, with as much right to a place there as other lesions in that group. Apart from that, medicine has still little to offer in any of these fields, as is shown by the very low percentages in which treatment has even been attempted.

With this introduction the extent to which radiotherapy as a method of treatment can be fitted into the general scheme must be examined and its relation to surgical methods considered. It seems easiest to present in tabular form the conclusions which I think may be arrived at by analytical study of the material. For this purpose I should like to submit for consideration a classification of malignant disease in relation to treatability by radiotherapy which I recently drew up.* It is inevitable that a few of the points raised in that paper be mentioned again.

It must be appreciated that such tabular methods do not allow for finer shades of classification and, moreover, that it is only possible to catalogue the state of affairs at the present time, forgetting temporarily the promise that radiotherapy will open up further fields as treatment technique develops.

TABLE IV.—*Radiotherapy Usually Contraindicated; Surgery indicated where Lesions are "Operable"*

Carcinoma of stomach. Carcinoma of colon and intestine. Carcinoma of rectum
The connective-tissue sarcomas—for example, osteogenic sarcoma, fibrosarcoma
Most advanced malignant diseases

Taking the bleakest aspects first, we find in Table IV those lesions in which radiotherapy has been adequately proved to have little or nothing to offer. Several of the lesions listed are treatable surgically in their early stages; others are equally hopeless to surgical approach. The sarcomas, if inoperable, may be palliated temporarily, but the fact that treatment is primarily surgical must never be forgotten. In regard to advanced malignant disease, I feel that it is important for the practitioner and the surgeon to learn to accept the therapist's ruling of "beyond radiation," just as in the surgical field "inoperable" is accepted as a legitimate judgment. Far too often unwillingness to accept such a ruling, mostly in the desire to "get something done—it really does not matter what," means that the patient's few remaining weeks or months are made much more distressing than they might have been had the situation been frankly faced and the best use made of opium, that greatest of Nature's drugs in the last resort.

TABLE V.—*Radiotherapy of Some, but Limited, Value. Usually Palliative—only rarely Curative*

Carcinoma of pharynx and larynx
Carcinoma of bladder (late) and prostate
Carcinoma of oesophagus
Carcinoma and sarcoma of lung and mediastinum
Cerebral tumours

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* Paterson, Ralston, "Cancer from the Point of View of the Radiotherapist," *Brit. J. Radiol.* (in press).

In Table V are listed those forms of malignant disease where radiotherapy is called for as treatment, but in which its very considerable limitations must also be realized. For the most part surgery is out of the question either because of the site of the growth or because it is so often diagnosed late. In one respect this is an experimental field in that much is being done to-day to try to extend the known though limited curative potentialities of radiation. In another sense it is a field in which, along with later cases of other groups, radiation, though not curative, has much to offer in its genuine palliative value. This palliative function of radiotherapy is something comparatively new in cancer therapy, because surgery by its very nature, except in the rare instances of colostomy and gastrostomy, functions chiefly as a curative device. The palliative aspects of radiotherapy certainly merit consideration quite apart from the question of cure or five-year survival. Such palliation may take the form of prolongation of life for periods of months up to several years. What seems, however, of greater importance is its capacity to relieve the manifold distressing symptoms associated with gradual extension of the malignant process—the arrest of haemorrhage or discharge, the cleaning up of foul and ghastly ulcers, the easing of dyspnoea or dysphagia, and, most important of all, relief of pain in many cases.

TABLE VI.—*Radiotherapy the Treatment of Choice: I, Tumours of High Radiosensitivity*

(i) *Embryonal origin:*
- Seminoma testis
- True embryonal tumour of ovary

(ii) *Primitive tumours of unknown origin:*
- Wilms's tumour of kidney
- Some tumours of thyroid glands
- Some tumours of salivary glands
- Some tumours of nasopharynx and nasal accessory sinuses

(iii) *Reticulo-endothelial origin:*
- Leukaemia
- Hodgkin's disease (lymphadenoma)
- Lymphosarcoma (reticulosarcoma)
- Thymoma
- Ewing's tumour
- Endothelioma (of vascular origin)
- Miscellaneous reticulo-endothelial diseases

The third group I have proposed is one showing those lesions which from the point of view of the radiotherapist seem to be his special field. These fall into two distinct subgroups. The first is an interesting and fascinating series of radiosensitive tumours in which, when first given, *x*-ray therapy seems to work magic. The curative possibilities are real but still not high, and the palliative results are of a very high standard indeed. This group is one in which no clash with surgery can arise, as few, if indeed any, of the lesions are amenable to surgical control alone.

TABLE VII.—*Radiotherapy the Treatment of Choice: II, Tumours of Moderate Sensitivity in Accessible Sites*

Carcinoma of:

Mouth, tongue, and lip
Skin (face and hands)
Cervix uteri
Vagina
Anus
Bladder (if limited)
Maxillary antrum

Table VII is perhaps rather more controversial. It is presented nevertheless in the firm belief that to-day only a minority of surgeons with any real experience of the achievements of radiation in these fields, especially by radium, would deny that this is a fair statement of the facts. Mouth and lip, cervix uteri, skin—at least of face and hands—are now almost universally admitted to be a radiation field. Bladder and anus represent a more personal belief, and are perhaps open to debate. The value of really radical surgery as a second choice in the event of radiation failure must, however, be strongly emphasized in regard to the majority of these lesions.

TABLE VIII.—*Surgical Extirpation and Radiotherapy Both of Value. Often Combined, Surgery Dominant*

Carcinoma of breast
Secondary carcinoma in lymph nodes
Carcinoma of body of uterus
Carcinoma of vulva
Carcinoma of penis and scrotum
Carcinoma of the skin (of trunk and limbs, not face and hands)
Benign giant-cell tumour of bone
Mixed tumour of parotid

Lastly, in Table VIII is a series of lesions to which I have given the subtitle "surgery dominant," to indicate that in my opinion these lesions, if operable, must be so dealt with as the first plan of treatment. If they are inoperable, or if they recur, radiation has much to offer even as a curative agent, and in the later stages it remains of high palliative value. Moreover, even where surgery is used it is at times advisable that radiation be employed in conjunction with it. May I illustrate by considering two examples.

In breast carcinoma, where the case is clearly operable, operation is called for, but such operation has its value enhanced if combined with a radical course of pre- or post-operative irradiation. In contrast, the borderline operable case seems to have a greater chance of recovery if dealt with by irradiation first on an intensive basis, and only amputated if that should fail to produce response.

The common mixed-cell tumour of the parotid, although probably more correctly considered as a benign tumour, is another useful illustration. The well-recognized tendency for this lesion to recur after three or four years seems to be very appreciably checked by combining the excision with a radium implant or with radical post-operative *x*-ray therapy.

The Early Case

In conclusion I would like to refer to one aspect of the application of the recent Parliamentary Cancer Bill which perhaps merits some thought. We have seen that there are four cancer types which we can, even using the word in a very limited sense, call "curable"—namely, breast, mouth, uterus, and skin. While we hope that the proposed extension of therapeutic facilities which will undoubtedly be possible under the Cancer Bill may gradually open up greater prospects in all fields of malignant disease, there can be no doubt that for the present the main harvest will only be reaped in so far as the prognosis is bettered in these four lesions only. To my mind that harvest will be reaped only in part, and that in lesser part, through the provision of adequate treatment facilities. Probably more will depend on how far the schemes of education and propaganda which have been allowed for in the Cancer Bill do in fact bring these four diseases to treatment in their early stages. The salient feature about every one of them is that the diagnosis is easy once the question of possible malignancy is raised at all. The lesion can be *felt* or *seen*. In the first instance, therefore, it would seem to be worth while to concentrate effort very largely on two main and essentially simple items. First, we must try to get the public conscious, not so much of cancer as a whole, but merely that medical advice should be sought quickly for the very limited list of signs and symptoms represented by these diseases. Secondly, we must get the practitioner more conscious of the enormous value of early treatment and the consequent critical necessity, where any doubt exists at all, of obtaining consultant opinion or of taking a section for histological examination. While admitting that the latter suggestion is controversial, I personally feel that much would be achieved by engendering the outlook that for the ulcerated lesion a section is as easy to get as a Wassermann test, and is of infinitely more value. Once such cases are diagnosed in their early stages, treatment becomes so important that they should be looked upon as urgent. Urgent treatment is particularly called for in early carcinoma of the breast.

Considering only the knowledge and the facilities at our disposal at the moment, greater immediate achievements are possible from the use of more simplified methods of education and propaganda for the early treatment of the accessible cancers, and by the organization of treatment facilities, than by any visible promise of accomplishment in the technique of treatment, whether by surgery or by irradiation.

Summary

This is an attempted analysis of the part which radiotherapy is capable of playing in the treatment of malignant disease. A survey is made of the various methods and technical facilities available, and how far they have been proved in practice to be effective or otherwise in treating each of the known types of malignant disease.

A classification of malignant disease in relation to treatability by radium is submitted.

The opinion is expressed that greater immediate achievements are possible from the use of more simplified methods of education and propaganda for the early treatment of accessible cancers, and by the organization of treatment facilities.

THE COMPLICATIONS OF GASTRIC ULCER

DESCRIPTION OF A CASE

BY

J. A. MARTINEZ, Ch.M., F.R.C.S.

Resident Surgical Officer, Walton Hospital, Liverpool

It is unusual for more than two of the direct pathological complications of gastric ulcer to develop in one patient. The following case is of interest in that four complications were observed—namely, perforation, gross haemorrhage, pyloric stenosis, and carcinoma.

Case History

A mechanic aged 36 was first admitted to Walton Hospital, Liverpool, in February, 1936. Five hours previously he had felt a sudden violent pain in the epigastrium, and nausea but no vomiting. He gave no history of previous dyspepsia. On examination the whole of the abdominal wall was almost rigid, and there was pronounced tenderness to the left of the umbilicus. At operation a chronic ulcer was found on the anterior surface of the stomach near the middle of the lesser curvature, with a perforation in the centre. The perforation was repaired and covered with omentum and the abdomen closed with a pelvic drain. Apart from the development of a small patch of consolidation at the base of the left lung, convalescence was uneventful and the patient was discharged with instructions to report in two months' time.

He was admitted again five months later, complaining of epigastric pain after food and vomiting. The symptoms had begun two months after the operation. The fractional test meal showed a high acidity without delay in emptying of the stomach. The radiologist reported distortion of the pyloric antrum; the stomach wall was mobile, and no ulcer was seen; there was no evidence of carcinoma. The patient's condition improved with dietetic treatment, and he refused to undergo an exploratory operation.

One month later he was again admitted with a history of having vomited about two pints of red blood on the previous day. There was marked pallor. The red cell count was 1,625,000 and the haemoglobin content 25 per cent. There were two further haematemeses of about eight ounces each on the next two days, and he passed tarry stools for five days. After this his condition improved steadily. The fractional test meal now showed an abnormally low acidity with some delay in the disappearance of starch. The radiologist reported that there were multiple filling defects at the pyloric end of the stomach with some induration of the wall. A blood transfusion of 500 c.cm. was given. The patient was once more urged to submit to operation, but he again refused, and left hospital.

Admitted for the fourth time seven months later, he presented the appearance of advanced emaciation. He had been vomiting repeatedly for three weeks, and it became apparent during the next few days that very little food was passing through the pylorus. He was treated for ten days with gastric lavage and intravenous and rectal salines until it was possible to explore the abdomen under local anaesthesia. A huge indurated ulcer was found on the anterior wall of the pyloric antrum and some soft enlarged lymph glands in the vicinity. The naked-eye appearance of the ulcer did not suggest malignancy. A posterior gastro-enterostomy was done, but it was noted that a gastrectomy would have been better treatment had the patient's general condition allowed it. After this he gained weight steadily and was fairly well on discharge from hospital.

Fifteen months after the second operation he returned, complaining of vomiting of two weeks' duration. He was now pale and wasted, and a small hard mass was palpable in the epigastrium. A fractional test meal showed the characteristics of advanced carcinoma of the stomach, and the radiologist confirmed the diagnosis. The vomiting continued and a jejunostomy was done under local anaesthesia. The patient died two weeks later, two years and nine months after the first operation.

Necropsy.—A large saucer-shaped cancer was found surrounding the gastro-enterostomy opening, which barely admitted one finger. The growth had blocked the pylorus so that it was difficult to pass even a probe through it. There were no secondary deposits in the liver or in the other usual situations. The site of the cancer corresponded with the ulcer noted at the first and second operations, and presumably originated in it. Microscopical sections showed a columnar-celled cancer.

Discussion

The patient suffered from a gastric ulcer which was complicated successively by perforation, gross haemorrhage, pyloric stenosis, and carcinoma. It is difficult to state at what time the ulcer became malignant, but it is likely that the change had already occurred at the time of the second operation, which was done for pyloric stenosis. A gastrectomy performed three months after repair of the perforation would probably have resulted in a cure, but the patient's consent could not be obtained.

FREQUENCY OF THE COMPLICATIONS OF GASTRIC ULCER

The development of these four complications in one gastric ulcer must be a rare occurrence. Any estimate of the frequency of each of the various complications is affected by the fact that only a fraction of all patients with ulcer attend hospital, and almost all the available figures exclude the large ambulant group whose symptoms are never severe enough to demand hospital treatment.

Perforation.—A review of the literature shows that the estimated incidence of acute perforation among ulcer patients in hospital varies between 4 per cent. (Kruse, 1937) and 19.6 per cent. (Thompson, 1937). Eliason and Ebeling (1929) give 10 per cent., and Brown (1934) 11 per cent.

Haemorrhage.—The frequency of gross haemorrhage is given variously as 18 per cent. (Lahey, 1930), 20 to 25 per cent. (Gordon-Taylor, 1937), 28 per cent. (Kruse, 1937), 30 per cent. (Allen and Benedict, 1933), and 38 per cent. (Goldman, 1936).

Pyloric Stenosis.—The only reference I can find to the incidence of organic pyloric stenosis is that of Kruse, who gives a figure of 20 per cent., but mentions that 51 per cent. of peptic ulcers show some obstructive characteristics. Jordan and Kiefer (1934) report on seventy-nine cases in which a six-hour residue was found in the stomach on radiological examination. Only 11 per cent. of these patients required surgical treatment for relief of the obstruction, and it was assumed that in the remainder the obstruction was transient and due to inflammation, spasm, or oedema.

Carcinoma.—The literature on peptic ulcer abounds with discussions of the frequency with which carcinoma develops on chronic ulcer, and even now that the histological characteristics of ulcer-cancer have been described and generally accepted there is wide variation of opinion. Klein (1938) writes: "Malignant degeneration of chronic gastric ulcer, if it occurs at all, is rare." At the other extreme the astonishing figure of 68 per cent. has been attributed to Wilson and MacCarty, but the latter states (MacCarty, 1927) that it is impossible to determine the correct figure. Dible (1925), in a series of necropsy and operation specimens, estimated an incidence of 1.7 per cent. Gutmann (1935) gives 2 to 4 per cent., and his figures agree with those of Hauser (1926) (3.4 per cent.) and Newcomb (1932) (3.75 per cent.). Stewart's (1926) frequently quoted article gives 6.1 per cent., and from Gömöri's (1933) article a figure of 8.6 per cent. can be calculated. Most pathologists now agree that carcinoma is a rare complication of gastric ulcer, and I believe that this view is held by most surgeons, even if their choice of treatment is influenced by the possibility of malignant degeneration.

I am indebted to Dr. H. H. MacWilliam, medical superintendent of Walton Hospital, for permission to publish this case.

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Proteins in Nephrosis.—In cases of nephrosis the molecular weights of the serum albumin and globulin were about twice the normal, while those of the urinary proteins were below normal.—Osmotic Pressure Study of Protein Fractions in Normal and in Nephrotic Subjects. J. Bourdillon.—*J. exp. Med.* June, 1939, **69**, 819.

USE OF STORED BLOOD FOR TRANSFUSION

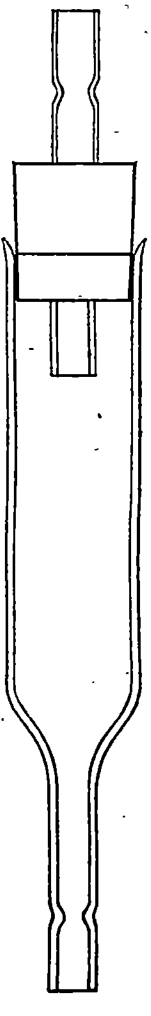
AN INTERIM REPORT

BY

J. L. HAMILTON-PATERSON, M.D.
Pathologist at Redhill County Hospital, Edgware, Middlesex

Group O blood was collected from the voluntary donors of the Emergency Blood Transfusion Service on September 3 and 4, 1939, for use in the event of air raid casualties. As these did not materialize it was decided to use the blood for patients already in hospital and requiring transfusion rather than waste it completely. To keep up the stock, relatives of these patients who belonged to Group O were bled when possible.

The apparatus used was that issued by the Medical Research Council and described in their publication, *Blood Transfusion Outfit*, September, 1939. The anticoagulant employed was pure sodium citrate. This was preferred to the citrate-saline mixture recommended, as in our experience less haemolysis of the stored blood resulted. At the time when the donors for the Emergency Transfusion Service were tested the samples were stored in this citrate-saline mixture (autoclaved in 1-oz. screw-topped bottles) and in many cases haemolysis was practically complete in forty-eight hours. With sodium citrate solution alone treated in the same way this did not occur.



Drip chamber

Method of Storage

Into each bottle 90 ml. (c.cm.) of 3.8 per cent. sodium citrate was put. When blood was added to the 540 ml. mark the final concentration of citrate was 0.63 per cent. The blood was collected straight into the bottle with a needle and a piece of rubber tubing about eight inches long. This was previously lubricated with sterile liquid paraffin. The double-bored cork was not fitted because when the bottle was agitated it disturbed the position of the needle unless a piece of tubing eighteen to twenty-four inches long was used. This was unsatisfactory, as the blood was more likely to clot, and the tubing was much more difficult to clean satisfactorily than the shorter piece. The mouth of the bottle was surrounded by a piece of sterile gauze. Latterly 20 ml. of a 50 per cent. sterile glucose solution has been introduced into the bottle with aseptic precautions. This gives an approximate final concentration of 2 per cent. glucose. The advantages of intravenous glucose in shocked patients is well known, and it also has some value in preventing haemolysis during storage. Spontaneous glycolysis does not occur at the temperature at which the blood is stored, as we have shown by daily sugar estimations over periods of ten days.

The blood was stored in ordinary household refrigerators of the size rented at 2s. 6d. a week, each one of which held thirty-six bottles. The temperature was kept between 2° and 4° C. Two small 3 by 3/8 inch tubes were attached to the side of each bottle with adhesive tape. One contained clotted blood for the Wassermann reaction and the other a suspension of red cells in citrate for cross-matching with the recipient's serum.

When the blood was given, the official administering equipment B was used (glass-bead filter). The beads were added to the blood immediately before use. The only modification introduced was a drip chamber (see Fig.), made from 5/8 by 5 inch pyrex test tubes and glass tubing. This was inserted in the system two inches from the neck of the delivery bottle. If desired the delivery tubing can be filled with saline before puncturing the vein by removing the cork from the drip chamber. During the transfusion it was found that sometimes the weight of the blood in the delivery tube pulled the chamber off the cork. This can easily be prevented by binding the junction with a strip of adhesive tape. Occasionally it was found necessary to cut down on the vein and employ a glass cannula instead of the needle supplied. This whole apparatus has functioned very satisfactorily in practice.

TABLE I

	Date Blood Stored	Date Blood Given	Amount Given	Reaction	Haemoglobin Estimations
1. Male. Bleeding gastric ulcer	2/9/39 2/9/39	5/9/39 8/9/39	540 ml. 540 ml.	No reaction „	5/9/39 40% 7/9/39 32% 14/9/39 40% 30/9/39 69%
2. Female. Ulcerative colitis	2/9/39 2/9/39 3/9/39	5/9/39 9/9/39 14/9/39	540 ml. 540 ml. 1,620 ml.	„ „ „	5/9/39 58% 12/9/39 54% 15/9/39 80%
3. Female. Tuberculous empyema ..	2/9/39	7/9/39	540 ml.	„	6/9/39 72%
4. Female. Threatened abortion ..	2/9/39	9/9/39	540 ml.	Temperature rose from 101.5° to 103.5° and then dropped to normal. Slight rigor half an hour after transfusion	8/9/39 32%
5. Female. Post-partum haemorrhage (breech delivery)	2/9/39 3/9/39	13/9/39 23/9/39	540 ml. 540 ml.	Temperature dropped from 99.8° before to 99° and 97.4° next morning. Pulse dropped also. Slight rigor half an hour after transfusion. No ill effects other than shivering Temperature rose from 98° to 100.2°. No increase in pulse rate. No further reaction	11/9/39 36% 15/9/39 36% 21/9/39 40% 2/10/39 48%
6. Male. Haematemesis	3/9/39 3/9/39	15/9/39 21/9/39	540 ml. 540 ml.	No reaction Temperature rose from 98° to 100.8° on same day and dropped to normal next day. Pulse rate went up to 158. No increase in respiration. No rigor or pain. Perspiration. Symptoms maximal half an hour after transfusion	14/9/39 40% 19/9/39 48% 27/9/39 70% 3/10/39 80%
7. Male. Haematemesis	2/9/39 3/9/39 3/9/39	11/9/39 15/9/39 21/9/39	1,080 ml. 540 ml. 540 ml.	No reaction „ „	11/9/39 50% 14/9/39 32% 19/9/39 40% 26/9/39 58% 6/10/39 52%
8. Female. Placenta praevia	3/9/39 3/9/39	16/9/39 22/9/39	540 ml. 1,080 ml.	„ „	16/9/39 42% 26/9/39 66%
9. Female. Haematemesis and melaena	3/9/39	23/9/39	540 ml.	Temperature rose from 99° to 102.4° after half an hour. Pulse rate rose from 98 to 116. Some vomiting with the rise in temperature. No definite rigor. Slight yellowness of conjunctivae next day	22/9/39 42% 25/9/39 48% 28/9/39 48%
10. Female. Fibroids	4/9/39	25/9/39	540 ml.	Temperature rose to 102°, pulse to 112. No physical signs or symptoms	23/9/39 32% 26/9/39 38%
11. Female. Fibroids	3/9/39 15/9/39	19/9/39 21/9/39	1,080 ml. 1,080 ml.	No reaction Temperature rose to 103°. Came down to normal after second lot (540 ml.) of blood. No further reaction	19/9/39 17% 21/9/39 18% 22/9/39 36% 6/10/39 52%
12. Male. Aplastic anaemia	3/9/39 15/9/39	27/9/39 6/10/39	540 ml. 1,080 ml.	Temperature rose to 99.6°. Oxyhaemoglobinuria one hour after transfusion. Urine clear 48 hours afterwards No reaction. Temperature remained normal. Pulse dropped from 132 to 104	22/9/39 58% 29/9/39 68% 9/10/39 62%
13. Female. Post-partum haemorrhage	3/9/39	29/9/39	540 ml.	No reaction	
14. Male. Ulcerative colitis	25/9/39 28/9/39 23/9/39	4/10/39 5/10/39 6/10/39	540 ml. 540 ml. 1,080 ml.	Slight rigor only No reaction „	4/10/39 38% 5/10/39 27% 6/10/39 38% 12/10/39 56%
15. Female. Abortion	4/9/39 26/9/39	4/10/39 5/10/39	540 ml. 540 ml.	„ „	5/10/39 52% 6/10/39 36% 12/10/39 44%
16. Male. Bleeding peptic ulcer ..	29/9/39	6/10/39	540 ml.	„	7/10/39 70%
17. Male. Lung abscess..	28/9/39	5/10/39	400 ml.	„	3/10/39 32% 9/10/39 60%
18. Male. Haematemesis	27/9/39	5/10/39	1,080 ml.	No reaction. Pulse dropped from 110 to 92 immediately	
19. Female. Post-partum haemorrhage	4/9/39	7/10/39	540 ml.	No reaction. Collapsed before. Pulse rapidly slowed to 90	12/10/39 46%
20. Female. Anaemia of pregnancy ..	26/9/39	9/10/39	540 ml.	No reaction	6/10/39 53% 12/10/39 52%
21. Female. Septic abortion	26/9/39	9/10/39	540 ml.	„	5/10/39 52% 9/10/39 52% 12/10/39 52%

Results of the Transfusion

Forty-six bottles of blood have been used. The blood had been stored three to thirty-three days, and the results are shown in Table I. Only in Case 12 was a moderately severe reaction encountered. Within an hour of starting the transfusion the child passed urine coloured a deep red and the temperature rose to 99.6°. On examination no red cells were found in the urine, and spectroscopic examination showed only bands of oxyhaemoglobin. The urine was normal next day and the child had no delayed reaction of any kind. In two cases (Nos. 3 and 4) in which the patients were febrile beforehand the temperature dropped to normal after the transfusion.

Alterations in the appearance of the blood during storage have been noted. The settled red cells turn almost black after three or four days and often a thick white layer of lipoid material settles out on the surface of the plasma. After the first week a layer of haemolysis, pink in colour, appears at the junction of the red cells and plasma. After twenty-eight days this may not be more than one inch deep and still only faintly pink. In some bottles, however, the whole of the supernatant plasma was similarly coloured. After thorough mixing, samples from the bottles were centrifuged. The amount of haemolysis was roughly proportional to the depth of the pink layer in the supernatant plasma, but was of course much more marked after shaking the settled blood. In practice we discarded all the bottles in which two-thirds of the supernatant plasma showed this pink tinge. Usually this pink layer was gelled and separated out in the filter. At no time did the blood show bacterial contamination.

The results of transfusion with stored blood are not so dramatic as with fresh blood. Often there is no immediate change in the patient's condition, and it may be two days before a maximal clinical improvement is noted. Similarly in exsanguinated patients rapid stimulation of blood formation is the exception rather than the rule. Haemoglobin estimations (Haldane) before and after transfusion are shown in Table I.

TABLE II

Length of Storage in Days	No. of Bottles Given	Reaction
3	2	Nil
5	1	Nil
6	3	1 and 2: Rise in temperature 3: Nil
7	5	1: Slight rigor 2, 3, and 4: Nil 5: Nil
8	2	Nil
9	4	1: Slight rigor 2, 3, and 4: Nil
10	1	Nil
11	4	1: Slight rigor 2, 3, and 4: Nil
12	2	Nil
13	4	Nil
16	2	Nil
18	2	1: Slight rise in temperature 2: Nil
19	2	Nil
20	2	Both showed rise in temperature and increased pulse rate
21	4	1: Slight rise in temperature 2, 3, and 4: Nil
22	3	1: Nil 2 and 3: Oxyhaemoglobinuria
26	1	Nil
30	1	Nil
33	1	Nil

Summary

When used for transfusion the blood had been kept for varying times (from three to thirty-three days). No really severe reactions were encountered. In one case there was a transient oxyhaemoglobinuria. In other cases there was a slight rise of temperature and pulse rate, and twice the patients had very mild rigors.

Comparison between the length of storage and reaction produced is shown in Table II. Blood given during the first six days of storage produced no reaction, and thereafter the length of time of storage has no effect in increasing the number of reactions encountered. Dramatic improvement in the clinical condition of the patient is much less frequent than when fresh blood is used. Blood regeneration is also slower.

My thanks are due to the medical officers of Redhill County Hospital for their willing co-operation in giving the transfusions and recording clinical data.

Clinical Memoranda

Paratyphoid B Fever with Respiratory Involvement

Early involvement of the respiratory system in enteric fever has been recognized for many years (Vincent and Muratet, 1917; Osler and Macrae, 1925). These cases give rise to considerable diagnostic difficulties, particularly in the early stages of the disease, the true clinical condition usually becoming apparent when other systemic manifestations of enteric fever appear. The following case of paratyphoid B fever is reported because clinical and radiological evidence of lung involvement remained the most striking feature throughout the whole duration of the illness.

CASE REPORT

A man aged 29 was admitted to a general hospital on October 17, 1938, complaining of headache, generalized pains, and a troublesome cough. At the age of 7 he had had a right empyema thoracis treated by rib resection, since when he had been subject to winter attacks of bronchitis. The present illness was considered to be of this nature until the sixth day after admission, when persistence of an irregular pyrexia and a slight degree of splenic enlargement indicated further investigation. Leucocytosis (58,000) with a slight relative lymphocytosis was present, the blood culture was sterile, but specific agglutinins to *B. paratyphosus* B were present in a serum dilution of 1 in 40 (O) and 1 in 180 (H).

The patient was transferred to the Eastern Hospital on October 26. On admission he was rational but fairly ill, and showed both dyspnoea and orthopnoea. Cough was a very troublesome feature and was accompanied by abundant frothy sputum. There was no impairment of lung resonance, but large rales were present at both bases. Examination otherwise revealed slight tumidity of the abdomen, a palpable splenic edge, and complete absence of abdominal reflexes. The bowels were constipated.

On October 28 the patient complained of pain at the angle of the left scapula, which was aggravated by coughing. Some impairment of resonance was present over this area and was accompanied by a rough pleural friction sound. Radiological examination showed irregular masses of opaque shadows in both lung fields, suggesting pneumonic patches, possibly based on the interlobar fissures. One well-marked area was present in the left lower lobe. The abdomen was now normal in appearance, but the splenic edge could still be palpated. The bowels remained constipated, but paratyphoid B organisms were recovered from the faeces. Blood examination showed a rising titre of specific agglutination to 1 in 80 (O) and 1 in 640 (H).

On November 3 the patient was more toxic and ill. He presented all the features of an acute pneumonic condition with dyspnoea, pleural pain, and a frequent troublesome cough. Sputum was still fairly abundant, but examination on this and other occasions failed to reveal paratyphoid organisms. From this point the patient began to improve. The temperature fell by lysis on the tenth day after admission and subsequent progress was quite uneventful. Radiological examination five weeks after admission showed a complete disappearance of lung shadows.

The resemblance of this type of paratyphoid infection to a purely respiratory disease has already been described by many writers (Stolkind, 1916; Klein and Torrey, 1920; Maxwell, 1937). In the above case the resemblance was so close as to carry a grave risk of delayed recognition, to the danger of other patients in a general hospital ward. The points of clinical value in differential diagnosis would appear to be: toxaemia out of proportion to physical signs in the lungs; splenic enlargement; and absent abdominal reflexes. It has been noted in previous epidemics that a preponderance of respiratory forms has characterized an enteric outbreak, as if the individual strain of organism had a predilection for the respiratory system. Support for this view cannot be gained from the present case, since one of the nursing staff contracted the disease, the illness being of the usual type and quite devoid of any respiratory features.

I am indebted to Dr. N. D. Begg, superintendent of the Eastern Hospital, for permission to publish the details of this case.

J. C. Hogarth, M.B., Ch.B., D.P.H.,
Assistant Medical Officer, Eastern
(L.C.C.) Hospital.

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A Large Calculus of the Urethra

The following case is, I think, worth recording on account of the comparative rarity of such large stones in this region.

Case History

A man aged 66 was admitted to the Royal Infirmary, Sheffield, on March 25, 1937.

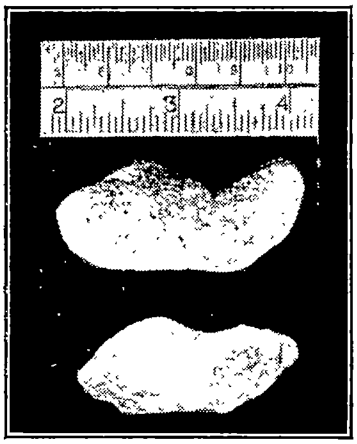
History.—In 1918 while running to a "dug-out" in France he fell on to a piece of wood which struck him in the perineum. There was immediately intense pain at the site of injury and along the penis, and later he noticed a few drops of blood at the end of the urethra. He did not pay any particular notice to this, as there was no difficulty in passing water. He did not report the accident and received no treatment. About three years later he began to suffer from difficulty in passing water. This slowly and progressively became worse, and as time went on he noticed that the stream of urine was becoming gradually thinner. A year before his admission to hospital he found that there was a lump in the perineum. It felt as hard as a bone, and was the size and shape of his thumb. He then found that he was able to alter the character of the stream of his urine by manipulating the lump, and concluded that the thin stream was due to the lump. For a year there had been considerable frequency of micturition. Otherwise he has always had good health.

Examination.—The patient looked well and healthy. On inspection of the perineum a swelling, measuring about 1 by 2 inches, was seen in the middle line immediately behind the scrotum. On palpation it felt hard and almost subcutaneous. It was movable in a transverse direction and was not tender. A diagnosis of a stone in the bulbous urethra was made and was confirmed radiologically. On micturition the stream was seen to be very thin and its character could be altered by manipulation of the stone. Examination of the urine showed pus, the infecting organisms being *B. coli* and a streptococcus. Radiological examination of the rest of the urinary tract did not reveal any other calculus, and the excretion pyelography was normal.

Treatment.—An external urethrotomy was performed and the stone was easily removed from a pouch in the bulbous urethra. The wound was stitched in layers and a soft rubber urethral catheter tied into the bladder. Recovery was uneventful.

Post-operative Course.—The frequency of micturition disappeared gradually during the course of a year. The stream of urine is now normal. The urethra admits a No. 12 catheter, and a urethrograph, taken about nine months after operation, shows the urethral pouch still present but about a third of its original size.

The Stone.—This measured 7/8 inch by 2¼ inches. Its colour was grey and its surface was smooth. On section it was laminated, and in its centre was a pale brown nucleus or primary stone which was also laminated. On chemical analysis the outer and larger portion gave the reactions for calcium and magnesium phosphate and the core or nucleus gave the reaction for calcium oxalate only.



Commentary

It is evident that the patient sustained a traumatic rupture of the urethra in 1918. This was followed by the development of a stricture of the urethra which would have been symptomless but for the fact that it blocked the downward passage of a single primary oxalate stone. The secondary phosphatic deposit on the primary stone seems to have taken place over a period of fifteen years and to have given rise to comparatively few symptoms until the occurrence of acute cystitis.

I am deeply grateful to Professor Ernest Finch for allowing me to treat and publish this case.

T. M. J. d'Offay, F.R.C.S.
The Royal Infirmary, Sheffield.

Reviews

BRITISH ENCYCLOPAEDIA OF MEDICINE

The British Encyclopaedia of Medical Practice, including Medicine, Surgery, Obstetrics, Gynaecology, and Other Special Subjects. Vol. XII, Tetanus to Yellow Fever. Under the general editorship of Sir Humphry Rolleston, Bt., G.C.V.O., K.C.B., M.D. (Pp. 672; index 56; 48 figures; 12 plates, some of which are coloured. 35s. net.) London: Butterworth and Co. 1939.

Volume XII of the new British Encyclopaedia completes the first series. It is to be followed by supplementary volumes containing, first, the index for the whole and certain new information which has come to hand since the first printing, and, secondly, a series of abstracts of medical literature and critical surveys of the development of the special branches. The complete index will be welcome as the present index to each volume is little more than a synopsis of contents. The continuation of the admirable series of articles under the able editorship of Sir Humphry Rolleston and his colleagues will be looked forward to with interest, and it is to be hoped that the war will not lead to a reduction of the high standard of scholarship, accuracy, and production hitherto maintained.

The longest article in the present volume deals with toxicology in its widest aspects. Poisoning, whether for homocidal or suicidal purposes, or accidental, is described by Dr. Roche Lynch of the Home Office, and the subject of industrial poisoning, a branch of medicine of great importance in which already much effective work in prevention has been carried out, by Dr. Donald Hunter. The practitioner will find in these concise and clear descriptions of symptoms and appearances the methods of dealing with such cases in their clinical and medico-legal aspects. The other long contribution is that on diseases and disorders of the uterus; in this four expert gynaecologists deal with its developmental abnormalities, displacements, prolapse, and tumours. One of the most satisfactory sections of the whole encyclopaedia has been that dealing with obstetrics and the diseases of women. The general practitioner has in this series clear and useful instruction in this important branch of his work. In this volume there are in addition sections on affections of the female urethra and on diseases of the vulva and vagina.

The consulting editor in tropical diseases, Sir Leonard Rogers, gives a survey of the incidence of general diseases in tropical countries based mainly on his own data from the analysis of a large number of necropsies on medical cases in Calcutta. It is interesting to note, and these figures are similar to those returned from the Philippines and in tropical America, that only one-third of the total deaths were due to tropical diseases in the strict sense, and even these are predominantly cholera, the dysenteries, and kala-azar. Tuberculosis and respiratory diseases are commoner among tropical patients, circulatory diseases considerably less, than at home. Articles on trypanosomiasis, yellow fever, torulosis, and tropical ulcer are included in this volume. The typhus fevers and trench fever are dealt with by Major-General Sir John Megaw. Both of these are regarded as due to Rickettsia infection carried by human parasites, especially lice, and therefore are liable to occur in widespread epidemics in conditions of overcrowding and defective hygiene, such as may be found during the war. Dr. Izod Bennett gives a useful summary of symptoms and treatment of uraemia, Dr. Dorothy Russell discusses the broad aspects of tumour formation in its effects on the functions of the body, and Dr. L. J. Harris describes present-day knowledge of the vitamins.

ENDOCRINOLOGY

The Endocrine Glands. By Max A. Goldzieher, M.D. (Pp. 916; 271 figures; 42s.) New York and London: D. Appleton-Century Company, 1939.

Professor Max Goldzieher's book on the endocrine glands is the product of thirty years' personal experience. He aims at stressing treatment based on that experience and protests against the nihilistic attitude which has found this startlingly frank expression, " No sound clinician is enthusiastic about therapy."

Large volumes on endocrinology follow one another with such rapidity that a reviewer can best help the prospective reader by calling attention to some individual features in each rather than by an analysis of the contents that would inevitably consist largely of repetition, since in the main they all follow the same plan. In the book before us more attention than usual is paid to the association between the endocrines and the vegetative nervous system, though perhaps greater stress is laid on the clear-cut distinction drawn by Eppinger and Hess between vagotonia and sympathicotonia than is usually current to-day. The importance is emphasized of receptor factors in the tissues in conditioning the response to hormonal stimulation, an aspect of the subject which is steadily attracting increasing attention. The short sections on the part played by endocrines in regeneration, ageing, and rejuvenation contain some interesting suggestions—one can hardly put it higher than that. Among these we may mention the alleged influence of thyroid in facilitating the formation of those areas of regeneration which may occur in cirrhosis of the liver.

Perhaps one of the more novel topics discussed is the influence of the endocrines on the reticulo-endothelial system. It was originally pointed out by Donath and Saxl (1925) that changes in the functional activity in the cells of this system could be observed following the injection of pituitrin or adrenaline. Later observers have claimed that these changes increased the resistance of experimental animals against infection. The author obtained some more direct evidence by injecting dyes, iron salts, and cholesterol, which are stored in the reticulo-endothelial system, and then observing the effects of hormones in increasing or decreasing the amount thus stored. He also employed an endogenous indicator such as bilirubin. As reticulo-endothelial cells are scattered throughout the various tissues and organs of the body they could not act similarly or synchronously unless they were regulated by a superior physiological force. As these cells do not possess nervous connexions they must be dependent upon hormonal influences, which from these observations he concludes are endocrinal. Alterations in the storage of fats and cholesterol in certain pathological conditions he thinks can be explained along similar lines. He attributes a considerable influence in this process to the adrenal cortex, but does not state clearly the evidence on which that opinion is based. We are more favourably impressed with his views on the effect of the pituitary on water storage in the reticulo-endothelial system, for it is clear that in many cases of so-called " pituitary obesity " retention of water plays a large part; salyrgan, which influences the water balance in the tissues, will not infrequently reduce weight more effectively than any organotherapy.

Professor Goldzieher's account of hypothyroid leanness is certainly rather heterodox, and the clinical description of two illustrative cases is not full enough to convince us. It is true, as he says, that pituitary insufficiency may lead on the one hand to obesity and on the other to the atrophy of Simmonds's disease; but the parallel is not really exact, since the pituitary secretes several hormones, while the thyroid only gives rise to one. Loss of weight accompanied by a low basal metabolic rate occurs in various conditions, and the presence of tachycardia in his cases hardly suggests that hypothyroidism was the cause. However, in such a rapidly growing subject as endocrinology there must, and indeed should be, room for different views and opinions. Apart from occasional rather startling statements Professor Goldzieher's book, which is well arranged and well illustrated, will prove a useful work of reference.

ALLERGY

Practice of Allergy. By Warren T. Vaughan, M.D. (Pp. 1082; 338 illus. 50s. net.) London: Henry Kimpton. 1939.

Nominally the third edition of a work by the author, this very large volume is really a new book which differs from its two predecessors in its title and other respects; the issues in 1930 and 1934 of *Allergy and Applied Immunology* were intended for both the medical profession and patients, whereas the present work is addressed to practitioners alone, the patients being provided for in the companion volume *Primer of Allergy*. The whole subject of allergy is exhaustively reviewed: its history, going back to "the father of medicine" and Lucretius, its physiology, aetiology, mechanism and significance, skin testing, elimination diet, percutaneous or diadermal allergy, and serum sickness. These sections form a storehouse of information, and lead up to the last of the sixteen parts of the volume—namely, that dealing with allergic diseases.

In addition to asthma (the term "bronchial asthma" being discarded), hay fever, migraine, skin diseases, and gastro-intestinal disorders, the manifestations, or at least the possible relations to allergy of a number of other diseases, such as thrombo-angiitis obliterans, angina pectoris, arthritis, gout, essential hypertension, and congenital pyloric stenosis, which are not usually included among the group of allergic diseases, are passed in review. Cases justifying this discussion are given—for example, great reduction of high arterial blood pressure as a result of the adoption of a diet free from articles to which the patient was shown to be sensitive. The subjects of thrombo-angiitis obliterans have been found to be sensitive to extract of tobacco in a high proportion. In three cases of angina pectoris, watched for long periods, the author reported considerable improvement, though not cure, by a diet freed from foods to which the patients were sensitive. In the eightieth and last chapter, which lays stress on the need for continuous records of life, a well-deserved tribute is paid to Sir James Mackenzie for the establishment of the St. Andrews Institute for Clinical Research in 1918.

CONSCIOUS ORIENTATION

Conscious Orientation: A Study of Personality Types in relation to Neurosis and Psychosis. By Dr. J. H. van der Hoop. Translated by Laura Hutton, B.A., M.R.C.S., L.R.C.P. (Pp. 352; illustrated. 15s. net.) London: Kegan Paul, Trench, Trubner and Company. 1939.

This book is not for the general reader. The author started as a disciple of Jung and proceeded to an analysis by Freud, and has since sought to discover the common ground between them by an intensive study of their philosophies and methods. He has always been attracted by Jung's attempts to differentiate types, especially the differentiations in relation to conscious orientation—thinking, feeling, intuition, and sensation. After a discussion of the nature and interrelationship of these types he discusses them in reference to the development and outlook of various psychopathic types, particularly in connexion with the psychoneuroses. So far as the psychoses are concerned he correlates his own ideas in typology with Kretchmer's distinction of people into cyclothymics and schizothymics, criticizing Kretchmer as too vague and with too great a tendency to mix pathological with normal manifestations. Finally a philosophical commentary is added, with a concluding chapter on the influence of the personal equation of an author not only on his formulation of types but on his whole approach to psychopathology.

This is not a book which is easily read, but the specialist who can spare the time and give the necessary concentration to the study of Professor van der Hoop's thesis will find himself enriched by the exercise.

DUODENAL DISORDERS

Affections non Ulcéreuses du Duodénum: Duodénites, Diverticules, Stases Mécaniques et Fonctionelles, Tumeurs, Malformations, Parasites. Physiologie Normale et Pathologique, Thérapeutic. By I. Pavel and A. Paunesco-Podeano. Preface by J. Ch. Roux. (Pp. 204; 57 figures; 50 fr.) Paris: Masson et Cie. 1938.

While ulceration of the duodenum is the commonest and most important pathological condition of that organ, there are a number of affections less well known. These have been dealt with simply and yet satisfactorily in the book by Drs. Pavel and Paunesco-Podeano of Bucarest. Just as gastritis has come into clinical prominence again, so duodenitis is now an established condition recognizable by *x* rays. It is, of course, frequently associated with duodenal ulcer, but in many cases there are reticular strial relief pictures of the duodenal mucous membrane with absence of a niche suggestive of ulcer, and an abnormal irritability of the duodenal bulb which is small and shows variable but considerable deformity. As well as this pseudo-ulcerous form, the authors describe duodenitis of haemorrhagic type, usually associated with disease of the gall-bladder or appendix, and duodenitis with jaundice. One of the latter forms is the so-called catarrhal jaundice, but in others there is a chronic state with prolonged jaundice in which at necropsy there is a greater or less degree of hepatitis forming one of the subgroups of Hanot's cirrhosis. Duodenal stasis may be mechanical from scars in the duodenal wall, or pressure from inflammatory processes externally in the gall-bladder region, or from compression by the pedicle of the small bowel mesentery, especially in defective abdominal muscle tone following operation, pregnancy, or illness. Tumours of the duodenum are rare, but parasitic infestation with lamblia and hookworm is fairly often met with. The former may give rise to symptoms in the duodenum and may invade the gall-bladder. Since the perfection of *x*-ray technique the frequency of duodenal diverticula has been reflected in the large number of papers in the medical journals, and while some of these diverticula are without symptoms, others cause patients to have more or less discomfort, vomiting, haematemesis or melaena, while inflammation of the wall of the diverticulum may occur and involve neighbouring organs.

The book is well put together. It begins with a summary of existing knowledge of the physiology of the duodenum, contains a number of useful illustrations and a fairly complete bibliography, and will be well received in a library of reference.

Notes on Books

In *The Restoration of the Peasantries* (C. W. Daniel Company Ltd., 6s.) Dr. G. T. **Wrench** traces the history of the Indian peasantry. His thesis, which was implicit in his earlier work, *The Wheel of Health*, is that the primary function of the land should be to produce food—not profit. He shows how in India, as elsewhere, chemical impoverishment and physical erosion have followed failure to return to the soil everything which has taken life from it and have brought in their train much avoidable poverty and other evils. Dr. Wrench presents many sobering facts and poses several urgent questions. Some of these questions he leaves unanswered, to others his answer is clear: only by the restoration of the peasantries of the world to healthy functioning will a healthy soil be resurrected and maintained and the health of plants, beasts, and man be assured.

Mr. F. A. **Philbrick** has produced a textbook *Inorganic Chemistry* (G. Bell and Sons, 6s.) in which a radical departure is made from the plan of such works hitherto produced. The underlying idea of this departure is the fact that textbooks have hitherto had a tendency to overburden the reader with more or less disconnected chemical facts to the detriment of his grasp of principles. The idea has a sound basis. If, as some may think, Philbrick has only in part accomplished his purpose he has yet done a good work in breaking through tradition; the break is overdue. And if he has carried his principle to too great a length for the elementary student, his book will, none the less, have a value as an additional textbook for supplementary reading which can hardly be overestimated. It is fully informative over a wide range of chemical knowledge.

Applications Médicales du Nouveau Codex et Prescription des Substances Vénéneuses, by Professor **René Hazard** of Paris, gives an account of the changes that have appeared in the French Codex of 1938. These changes are very numerous, because the previous Codex appeared in 1908, and in the intervening thirty years several supplements have been published. The volume also gives an account of the French poison laws, which are based on an Act of 1916, as modified by several subsequent Acts and regulations. These laws bear a general resemblance to those in force in this country. There are separate schedules for poisons, for stupefying drugs, and for drugs which may only be supplied on a medical prescription. The volume provides a brief summary of the essential facts relating to the prescribing of drugs under French law. The publishers are Masson et Cie, and the price 18 fr.

L'Examen du Malade: Guide Clinique de l'Étudiant et du Médecin, by P. Delmas, G. Giraud, E. Jeanbrau, E. Leenhardt, J. Margarot, P. Pagès, V. Riche, L. Rimbaud, J. Terracol, and H. Villard, is published in a revised and enlarged edition by Masson et Cie of Paris at 45 fr. This concise handbook with fifteen chapters but without illustrations describes how to examine patients, including the case history, and covers the wide field of medicine, surgery, obstetrics, gynaecology, neurology, and other special departments. M. Émile Jeanbrau, professor of clinical urology, and eight colleagues of the medical faculty of Montpellier have dedicated this second edition of their combined pens to M. E. Leenhardt, professor of paediatrics, who died while the handbook was in the press. Since the first edition in 1935, not only has the text been revised but two new chapters have been added: psychiatric disorders by Professor Paul Pagès and endocrine manifestations by M. G. Giraud, professor of clinical medicine, who contributes two other important chapters on the general medical examination and most of the laboratory methods. Professor Jeanbrau, with thirty years' experience in teaching, is responsible for the examination of surgical patients and two chapters on examination of the urine—the "living" urine in the clinic and that in the laboratory. Well arranged, this handy volume is provided with a good index.

Preparations and Appliances

A DROP-WRIST SPLINT

Mr. J. S. **Kellett Smith**, F.R.C.S., D.M.R.E. (Cheltenham), writes:

Drop-wrist occurred in some 14 per cent. of cases of injury to peripheral nerves sent for treatment to the electrotherapy and massage department of Summerdown Camp in the four years 1916–20. Splinting was a problem at first. The ordinary small "cock-up" is dirty and uncomfortable in wear, and expensive in the way of plaster and bandages. While in charge of the above department I designed a drop-wrist splint which proved a success in practice. Our own supply was made by an enthusiastic amateur who possessed a suitable workshop, and the pattern was copied afterwards in many other centres. The splint consists of a length of rigid tinned steel wire, gauge 8 or a little heavier, on which is threaded a wooden finger rest and some rubber tubing as padding for the thumb. The wire is then bent to appropriate shape for "rights" and "lefts," and the ends turned forwards to form a pair of loops. A second pair of loops of finer wire is soldered into position as shown. Finally, a piece of inch-wide stout webbing is fixed between the terminal loops. The splint is held in position by two lengths of similar webbing passing through the retaining loops and fastening with book-strap buckles (Figs. 1 and 2).

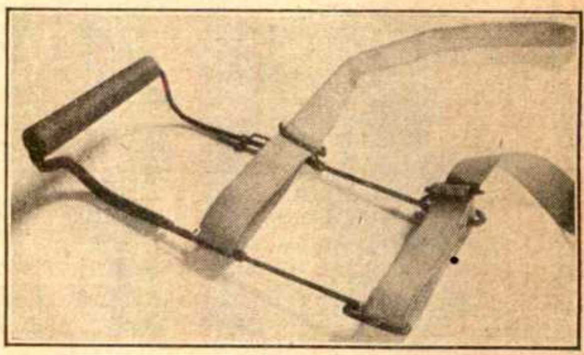


FIG. 1.

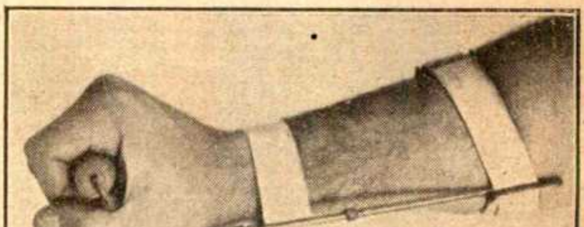


FIG. 2.

The men appreciated the comfort of this splint and made no difficulty about wearing it. It had the additional advantage of costing nothing for bandages.

On October 21 (p. 810) we noticed the polyvalent vitamin concentrate made by H. R. Napp Ltd. under the name "abecedin." In regard to the keeping properties we are asked to say that the warning given by the manufacturers to users of this product as to the possibility of deterioration by air contact after the packet has been opened applies only to the emulsion and not to the tablets, which are sugar-coated.

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SATURDAY NOVEMBER 4 1939

DRUG TREATMENT OF ANGINA AND HYPERPIESIA

In 1933 Evans and Hoyle[1] showed that drugs were of little help in the continuous treatment of angina pectoris, though they later[2] pointed out that glyceryl trinitrate tablets were of great value in the prevention and treatment of individual attacks, provided they were chewed thoroughly to ensure rapid therapeutic action from immediate absorption of the drug from the mouth. Their conclusion as to the inefficacy of continuous drug treatment in diminishing the frequency or severity of attacks of angina pectoris has been completely confirmed by Master, Jaffe, and Dack.[3] They studied the effect of sixteen drugs, including several xanthine derivatives; alcohol; sedatives such as phenobarbitone, chloral, and bromides; the nitrites; a tissue extract; digitalis; and two narcotics—codeine and dilaudid. No remedy was found to exert any specific effect on the anginal syndrome, for the best effects were obtained with a placebo and the number of patients improved ranged between 15 and 30 per cent. for all drugs. "A new medication, a new physician, a new type of therapy may bring relief. Thus the average patient feels improved during the first few weeks of attendance at the clinic no matter what drug he receives. This probably explains the reports of good results with numerous drugs." A large volume of recent work has proved that the psychological factor is as important in effort angina as in migraine or asthma. It is probable that effort angina occasionally occurs when coronary disease is absent or minimal, and it is certain that effort angina associated with extreme coronary sclerosis may be completely relieved by the removal of emotional stresses such as friction in the home or the work-place and financial insecurity. It is on such factors and not on drugs that the therapeusis of angina pectoris should be concentrated.

Continuing the process of pharmacological deflation, Evans and Loughnan[4] have completed an investigation of the action of thirty-three preparations on the blood pressure and symptoms in seventy patients with hyperpiesia (essential hypertension) over a period of eighteen months. The drugs or preparations were various and included nitrites, iodides, sedatives, xanthine and choline derivatives, vegetable extracts, and hormones. The first important fact which these observations reaffirmed was the great extent of the spontaneous variations in blood pressure. There is commonly an initial fall due to the excitement and novelty of the first estimation, and thereafter quite considerable cyclic variations in the pressure may occur. There seems to be little or no correlation between these fluctuations in the pressure and the symptoms. After allowance had been made for the tendency to obtain high blood-pressure readings at the first and possibly at the second examinations and for the natural variation, and when the results from the tested drugs had been compared with those from a placebo, Evans and Loughnan found that none of the thirty-three preparations produced hypotensive effects in patients with hyperpiesia. In regard to symptomatic improvement only six of the drugs—namely, bismuth subnitrate, iodine and iodide, bromide, sodium luminal, theominal, and potassium thiocyanate—on an average relieved symptoms rather more than did the placebo. The sedative drugs seem to be of use in temporarily relieving nervous symptoms when these are prominent. Reduction of weight in patients with obesity was usually associated with relief of symptoms, but the variations in pressure did not differ from those in the untreated disease.

Whether patients with hypertension would be benefited by a sustained fall in their pressure produced artificially, as it were, and in ignorance of the cause of the condition, is a moot point, for at present there is no medical or surgical means by which this may be done. There are three arguments against the use of drugs in uncomplicated hypertension. First, they are ineffective. Secondly, many are expensive; treatment with padutin can be estimated to cost 5s. 6d. a week, and a three-weeks course of treatment with vagotonine would cost two to four pounds. Thirdly, they may do harm. The only positive effect Evans and Loughnan observed with vagotonine was a severe urticaria. Moreover, a large literature has grown up about thiocyanate therapy in hypertension, which leads to the conclusions that thiocyanates in doses large enough to reduce blood pressure are toxic and may destroy life, and that in some patients there is little or no margin of safety between the toxic and the therapeutically effective dose.[5]

GAS INJURIES TO THE EYE

Fifty-two years ago Leber[6] in a study on inflammation in the eye described the action on the cornea and conjunctiva of a highly irritating chemical compound just discovered by his colleague Viktor Meyer. To Leber, who noted fully the destructive action of this new compound, the point of interest was that it could produce pyogenic inflammation in the absence of micro-organisms, but he lived to see his new laboratory reagent used for less academic purposes. His conclusion that mustard gas could produce a pyogenic reaction was advanced only tentatively, for it was based on a single experiment on a rabbit, and his expressed wish for the experiment to be extended and amplified has since been carried out on a larger scale than he dreamt of and in the grimmest of laboratories. As a footnote to Leber's experiments it may be stated that the German High Command in 1915 fully confirmed his observations on the necrotizing action of this compound, but disproved that it induces a pyogenic reaction in the absence of secondary infection. A conclusion of Viktor Meyer's was also disproved, for it was found that, contrary to his belief, the action of mustard gas was strictly local and not remote from absorption through the blood stream.

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[1] *Quart. J. Med.*, 1933, **26**, 311.
[2] Ibid., 1934, **27**, 105.
[3] *Amer. J. med. Sci.*, 1939, **197**, 774.
[4] *Brit. Heart J.*, 1939, **1**, 199.
[5] *J. Amer. med. Ass.*, 1939, **112**, 1220.
[6] *Die Enstehung der Entzündung*, Leipzig, 1891, p. 338.

The fundamental feature of ocular injuries produced by mustard gas is that the injury is directly proportional to the concentration that reaches the eye. During the last war, when vapour gas was used and the methods of distribution were not too effective, only about 10 per cent. of gassed men developed corneal lesions—mostly transient—and it is said that only about fifteen men in all were blinded by gas. The methods of distributing gas that are available to-day are likely to cause more casualties (in the absence of protective measures, which have also grown in effectiveness). The latent period between exposure and the appearance of symptoms, which in the last war was generally six to twelve hours, is thus likely to approach the total absence of a latent period after a splash from liquid gas, and the severity of the reaction is likely to be such that many more cases of corneal involvement, with their much longer course and more serious prognosis, will be seen. In the improved protective measures rather than in improved methods of treatment lies the hope of counteracting these threatening possibilities, for treatment of a gas injury, whether brought about by vapour or by liquid, comes up against the fundamental difficulty that the effect of gas on a tissue is instantaneous, though there is some experimental evidence that the prophylactic use of chlorinating agents will render a gas injury to the eye less serious.[7]

The potentialities of gas warfare have been increased not only by the perfection of the means of distributing more concentrated vapour but also by its possible use in air raids on the civil population. This possibility was usefully discussed in the Section of Ophthalmology at the Aberdeen Meeting of the British Medical Association this year. The discussion revealed that there were considerable gaps in our knowledge of the action of gas on the eye, and that the measures of defence left room for improvement. One of the openers, Colonel A. Irvine-Fortescue,[8] stressed the need for hospital facilities of the marquee type to accommodate a sudden large influx of persons temporarily blinded by gas. It is true that most such patients have no serious lesions, but the irritating symptoms and the anxiety state which develop make in-patient treatment necessary. Patients with no serious lesions, yet unable to open their eyes and afraid of blindness, may well be a source of panic when treated as out-patients. An auxiliary nursing personnel specially trained in eye irrigation and a sufficient supply of irrigators to allow of a considerable number of eye casualties being treated simultaneously are other measures necessary to supplement this improvised in-patient treatment. That such facilities are at present not widely available emphasizes Colonel Irvine-Fortescue's plea for a special civilian ophthalmic corps working under the supervision of an ophthalmologist-in-chief. Besides unresolved administrative problems there were many others of a clinical character, as was brought out by Mr. Arnold Sorsby[9] at the same meeting. Mustard gas being persistent and its action instantaneous, the scope for treatment appears to be distinctly limited. Yet irrigation has some value by minimizing the possibility of a cumulative action. The variety of suggested methods of treatment indicates only too clearly the prevailing confusion. Some would use bland lotions to effect mechanical cleansing; others see virtue in alkaline lotions. Drops of castor oil or paraffin have their advocates, though the wisdom of introducing into the eye substances which act as solvents of mustard gas is doubtful. The weight of opinion is against the use of cocaine or its substitutes to relieve symptoms, as it is generally agreed that cocaine is undesirable because of its devitalizing effect on the corneal epithelium. The employment of atropine in cases of corneal involvement is the one positive feature on which there is agreement. Silver preparations to counteract possible secondary infection, though generally recommended, are condemned by some.[7] The use of ointments as suggested by a correspondent[10] in last week's *Journal* is open to serious objection, while his advocacy of keeping the eyes bandaged is contrary to experience and theoretical considerations. There is indeed nothing to be said for any method of treatment which impedes free secretion of the irritating products of a gas burn and tends to keep the gas pent up in the eye. Bonnefon's[11] recommendation of procedures, such as irrigation by hypertonic lotions, which aim at an increased flow of secretion is physiologically more sound.

The lack of agreement of views extends even to the question of gas-masks. One difficulty is the reduced field of vision induced by eye-pieces in some of the more elaborate masks. The wearing of glasses with most forms of mask is uncomfortable, apart from rendering the masks ineffective from disturbed fitting. Specially made spectacle frames of reduced size and white metal do not overcome the disadvantage of moisture settling on the lenses, for the spectacles tend to disturb any anti-dimming substances applied to the lenses or eye-pieces of the mask. From a careful survey of various possible devices for the individual compelled to wear glasses with his mask, Cot, Moynier, Genaud, and Robert[12] conclude that the best procedure is the incorporation into the gas-mask of two separate wire rims each carrying a lens. This arrangement is easily fitted into the standard gas-mask used in France, but would not appear to be suitable for the corresponding model in this country.

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[7] *The Medical Aspects of Mustard Gas Poisoning*, London, 1919, p. 123. By A. S. Warthin and C. V. Weller.

[8] *British Medical Journal*, 1939, 2, 846.

[9] *British Medical Journal*, 1939, 2, 641.

[10] Ibid., 881.

[11] *Gaz. hebd. Sci. méd.*, 1939, 60, 168; *Siècle méd.*, 1939, September 1.

POTASSIUM IN THERAPEUTICS

The clinical scientist, perusing perhaps for the first time that admirable volume the *National Health Insurance Formulary*, may notice with interest the extent to which potassium salts enter into popular therapeutics, and he cannot fail to be surprised to learn that the total amount used medicinally runs into hundreds of tons a year. Much of this is in the form of the bromide and is a relic of the days when the corresponding sodium salt was difficult to prepare in a pure form. Sodium and ammonium bromide have nowadays certain theoretical advantages over the potassium salt and may well replace it if necessary. In other prescriptions potassium salts are used merely for what the pharmacologist calls a salt action, and this is the use which may most seriously be questioned. An average diet contains from 3 to 4 grammes of potash and 5 to 8 grammes of soda a day. Sodium chloride deficiency is quite common, but potassium deficiency appears to be unknown. Anyone who has treated a case of Addison's disease by means of a low potassium diet knows how difficult it is to reduce the intake of potassium. The only conditions in which the action of the potassium ion appears to be of value are the rare nervous diseases familial periodic paralysis[13] and myasthenia gravis.[14] Large doses of potassium salts have also been recommended in asthma and other allergic diseases,[15] [16] but here their value is much more problematical. Until recently the oedema of Bright's disease was an accepted indication for potassium salts, but evidence has now accumulated to show that they may be very dangerous when the kidney is diseased. At the meeting of the Association of Physicians of Great Britain and Ireland last year[17] several speakers described how patients with oedematous nephritis often died suddenly and unexpectedly, and they attributed this to the use of potassium salts as a diuretic, with consequent retention of the depressant potassium ion in the body fluids. Thomson[18] has shown this graphically by serial electrocardiograms in patients with nephritis to whom potassium salts were given in high dosage. There seems little doubt about the risk of sudden cardiac death if the level of potassium in the body fluids rises much above the normal levels. The term "diuretic" is sometimes used in other senses than the relief of dropsy, and potassium salts are prescribed as diuretics and diaphoretics in febrile illnesses. The prescription of saline solutions for such a purpose is not a very rational procedure. A moment's thought shows that the only way to get water out of a dehydrated patient is to put water in, and fluids must be pushed by mouth, by rectum, or in the last resort intravenously, until the tongue becomes moist and the output of urine rises to 1,500 c.cm. a day. Potassium salts are likely to do more harm than good under such conditions, and, if salts must be prescribed, they should be salts of sodium. A febrile urine means no more—and no less—than a failure on the part of the attendants to meet the increased requirement of fluid when the temperature is high. Finally, alkaline potassium salts are given in urinary diseases such as pyelitis, cystitis, and urethritis, but here the action is sedative rather than diuretic and the therapeutic agent is the alkali and not the potassium. There is no reason why sodium citrate should not be used for alkalinization. A pleasant way of administering it is to dissolve three-quarters to one teaspoonful in a nearly full glass of cool water and add slowly the juice of half a large lemon or one lime.[19] We understand there is no actual shortage of potassium salts, but the physician wishing to reduce his drug bill, whether in private or panel practice, might more often pause and ask himself, "Do I really wish to prescribe potassium?"

THE LONDON AMBULANCE SERVICE AND ITS CRITICS

The London ambulance service normally consists of twenty-two stations and 173 vehicles. To this has been added a volunteer ambulance service, formed for the transport of injured persons to first-aid posts and hospitals, which comprises some 200 stations, most of them, of course, buildings designed for quite other uses, an unstated number of vehicles of various sorts, and a staff of about 8,000 volunteers, among whom men and women are in about equal proportions. Although the service is described as "volunteer," the majority of the workers are paid for their services. Various criticisms have been directed against the service; they are not as pointed as those which concern the A.R.P. services in general, but it is complained that the service is not sufficiently co-ordinated with the other precautionary services, that it overlaps in some directions and leaves lacunae in others, and that there is a lack of sufficiently strict central control, leading to a certain absence of discipline in the rank and file. One detailed criticism is that the ambulance stations and the stations of the A.R.P. stretcher parties do not correspond, but as to this it is pointed out that the stretcher party stations are much more numerous than the ambulance stations, and, moreover, that the stretcher parties, after placing their casualty cases in the ambulance, may be called elsewhere to render first aid, so that there is still good reason for keeping the two services separate and under different directions. It is not quite clear how many volunteers have been enlisted for stretcher party work ; the Home Office originally called for 14,000, who would be trained to qualify for first-aid certificates under the borough councils and their medical officers of health. A quota was given to each of the London boroughs, and it is understood that some of them have not yet secured a full enrolment.

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[12] *Presse méd.*, 1939, **47**, 1311.

[13] Aitken, R. S., Allott, E. N., Castleden, L. I. M., and Walker, M. (1937). *Clinical Science*, **3**, 47.

[14] Laurent, L. P. E., and Walther, W. W. (1935). *Lancet*, **1**, 1434.

[15] Rusk, H. A., Weichselbaum, T. E., and Somogyi, M. (1939). *J. Amer. med. Ass.*, **112**, 2395.

[16] Bloom, B. (1939). Ibid., **113**, 1507.

[17] Platt, R. (1938). *Quart. J. Med.*, **31**, 590.

[18] Thomson, W. A. R. (1939). *Lancet*, **1**, 808.

[19] Solis-Cohen, S., and Githens, T. S. (1928). *Pharmacotherapeutics*, New York and London.

On inquiry at the offices of the London County Council we were informed that those responsible for the ambulance service preferred to say nothing at the moment in view of the fact that a report on the subject is to be presented to the next meeting of the Council, fixed for November 14. Some of the criticisms are easily answered by the fact that the service is a new one and has to pass through the inevitable period of "growing pains." Its expansion has been very rapid, and it would be rather wonderful if the recruitment of personnel or material had been everything to be desired. Within the first three weeks of war 5,000 volunteers had been enlisted and over 100 stations opened, and within eight weeks the number of stations had been doubled and the number of volunteers increased by more than half. It is out of the question to suppose that 8,000 people joining an emergency service can immediately be disciplined in the same way as a regular ambulance service, each member of which has been carefully chosen and has undergone a long period of training. The people who have joined the service belong to all classes of the community, from titled ladies accustomed to driving their own cars to young men whose only experience has been on commercial lorries. The vehicles taken over for ambulance purposes are also of very diverse character; many of them are ordinary delivery vans fitted with racks to carry stretcher cases. A good deal of weeding out of both volunteers and vehicles has had to take place, and as time goes on there is every likelihood that the service will be as efficient as it is reasonable to expect, always bearing in mind that it is an auxiliary service, a temporary one, and to some extent voluntary. In any case criticism should be stayed until the London County Council has made its reply.

A WORLD ASSESSMENT OF BLINDNESS

The International Association for the Prevention of Blindness undertook in the past years an inquiry into the incidence of blindness throughout the many countries of the world, and of the regulations in force in those countries for the prevention of blindness. This report has now been published in French by the Egyptian "Concilium Ophthalmologicum."[1] It is an important piece of work of 310 pages, and full of information collected by the International Association. No fewer than thirty-seven countries responded to the inquiry. It is of much interest to compare the reports and to note the differences shown in them, not only in the variation in the main causes of blindness but also in the number of the blind in relation to the populations. In the East the figures are estimates, and they are high owing mostly to the widespread incidence of trachoma. In some of the Western countries the figures seem to be contradictory, for there is recorded a higher proportion of blindness in some of those countries where we know most is done, and done successfully, for the prevention of blindness. The reason for that apparent contradiction is that in these countries, like England, blindness is measured by its economic disability and not by a total absence of sight. The report is a valuable document and the Egyptian publication is well done.

CIRCULATION IN THE FOETUS

While continuing their radiological studies of the ductus arteriosus[1] with a greatly improved technical equipment, A. E. Barclay, Sir Joseph Barcroft, D. H. Barron, and K. J. Franklin were led to suspect their previous identification of this structure in the sheep foetus. They have now shown that this suspicion was justified, for in their latest paper[2] they present conclusive evidence from three distinct types of experiment. The most spectacular experiment was the retrograde injection of radio-opaque medium, via the femoral artery, in a newborn lamb with a very feeble heart-beat. The medium, faced by so low a resistance, passed up the aorta to the aortic valve and from the aorta, through the ductus arteriosus, into the pulmonary trunk and pulmonary arteries. Individual frames from the direct *x*-ray cinematographic record of the injection show quite clearly the anatomical relations of the ductus to the two great vessels that it unites. It is to be noted that the ductus joins the aorta distal to the point of origin of the brachio-cephalic artery, which corresponds to the innominate and the left subclavian arteries of the human subject. Having identified the ductus beyond dispute, the authors of the paper proceeded to investigate the courses taken by the blood flowing along the superior vena cava, and from the umbilical vein along the inferior vena cava. They found that all the superior caval blood goes into the right ventricle; thence it passes, on the one hand, into the pulmonary arterial system and, on the other, through the ductus arteriosus into the descending aorta. In contradistinction to the superior caval flow the oxygenated blood coming up the inferior vena cava from the placenta has two pathways. The bulk of it goes through the foramen ovale to the left side of the heart and passes via the aortic valve into the aorta, whence it supplies, through the coronary arteries, the heart, and through the brachiocephalic artery the brain. At the same time a small portion leaves the main stream in the right auricle and goes through the right ventricle to the pulmonary arterial system and, by way of the ductus arteriosus, to the descending aorta. The experiments described provide the first direct demonstration of the mammalian

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[1] *Rapport de l'Association Internationale de Prophylaxie de la Cécité sur le Nombre des Aveugles et la Protection des Yeux dans les Différent Pays.* Vol. VII. Cairo: E. and R. Schindler.

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[1] *British Medical Journal*, 1939, 1, 929.
[2] *Brit. J. Radiol.*, 1939, 12, 505.

foetal circulation, and it is of interest to see how closely previous observers have approached to the actual facts by various indirect methods. The times taken for functional closure of the ductus arteriosus and foramen ovale are not given in detail, but may be expected to appear in a later paper. It is not without interest that this description of the foetal circulation and identification of the ductus arteriosus has been published in the same year as the first successful ligation of a patent ductus in the human being.[3]

"FOREIGN PHARMACEUTICAL PRODUCTS: BRITISH EQUIVALENTS AND ALTERNATIVES"

In last week's *Journal* (pp. 868–75) we published under this heading a list of pharmaceutical preparations described as "foreign products," with an attempted correlation of British products. As indicated in the introductory paragraphs, the schedules were furnished to us by the Association of British Chemical Manufacturers, upon whom we relied for their accuracy. We have now received communications from a number of firms in this country informing us that certain of their pharmaceutical products are included in the list erroneously as "foreign products," whereas these products are manufactured in this country and in some instances have been so for a number of years. Sulfarsenol Laboratories, Ltd., for example, state that sulfarsenol is now manufactured in England at Alperton, Middlesex. The Denver Chemical Manufacturing Co. (London, N.W.9) state that for years past antiphlogistine has been made in England, and they do not anticipate any shortage. Warner and Co., Ltd., of Power Road, Chiswick, London, W.4, the proprietors of the trade marks "anusol" and "veganin," inform us that these products have been manufactured by them in England for a number of years. Gedeon Richter (Great Britain) Limited state that their products aurobin and kalmopyrin are manufactured by them in London. Ciba Limited state that dial tablets have been manufactured in this country for over twenty years, that they have ample stocks of coramine, and that the manufacture of this product will shortly begin in their new laboratories at Horsham. Laboratory Nativelle Ltd. (London, N.1) state that there is no shortage of stocks of Nativelle digitaline, and they have taken elaborate precautions both in France and in this country to ensure continuation of supplies. It should be pointed out that the introduction to the schedules published last week did not state that any or all of the products listed in columns 2 and 4 are necessarily equal in value to the products listed in column 1. The explanatory note reads as follows: "Column 2 gives the British product/s having the same essential composition as the item in column 1. Column 4 gives the British product/s having similar therapeutic properties and capable of replacing the product in column 1." No statement was made that any of the products in column 1 are unobtainable in this country. The mistake—in which we followed the Association of British Chemical Manufacturers—was in heading column 1 "Foreign Product," and including under that heading a number of proprietary preparations which, though understood to be of foreign origin, are manufactured in this country. In the list supplied to us the names of certain trade marks are set out as if they were the names of drugs. It has been pointed out to us that in doing so we may have infringed the rights of the owners of the trade marks under the Trade Marks Act of 1938. We can only express our regret for having inadvertently published material which may infringe a trade mark or which is incorrect or in any way misleading. Our purpose in printing the list supplied to us was to make information available to medical men concerning the British sources of supply in case they should experience difficulty in obtaining proprietaries of foreign origin which they had been accustomed to use.

CHRONIC ARTHRITIS AND GONORRHOEA

Acute gonorrhoeal arthritis is not uncommon and is recognized by its association with a recent acute infection, but gonorrhoea is easily overlooked as the possible cause of chronic progressive arthritis. Dr. R. J. Weissenbach and his colleagues[1] found that out of 1,485 cases of chronic rheumatic diseases 126 were gonorrhoeal in origin. In some of these cases the original infection had occurred many years earlier, and there had been acute or subacute attacks of arthritis or arthralgia before the chronic condition developed. One joint only was affected in thirty-three of these authors' cases, and more than three joints in seventy-one. The knees were most often attacked and then the feet, while in the upper limb the wrists were the most usual site of the disease. The old idea that the sterno-clavicular and temporo-maxillary articulations are especially liable to attack receives no support from these authors, who state that in no circumstances should symptoms in these joints be regarded as a guide in diagnosis. They attach importance, however, to the localization of the arthritis in the feet and ankles and especially to pain in the heel, and regard gonorrhoea as the principal cause of pain in this region and of the spurs or exostoses sometimes seen on the os calcis. A tendency to bony ankylosis, which they think especially liable to affect the knee and shoulder, is regarded by them as characteristic of gonorrhoeal infections, though others find bony ankylosis of the tarsus more common. Weissenbach and his colleagues emphasize the association of iritis with arthritis of the vertebral column, but it should be noted that irido-cyclitis has been reported in cases of ankylosing spondylitis without evidence of gonorrhoeal infection. Treatment with sulphonamide compounds was successful in five out of seven of the cases of acute gonorrhoeal arthritis. Out of thirty-seven subacute cases the disease was cured in nine and arrested in twenty-six, and out of three cases of the chronic form it was cured in two and arrested in one. These figures show that the treatment is worth trying in proved or suspected cases of gonorrhoeal arthritis.

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[3] *J. Amer. med. Ass.*, 1939, **112**, 729.

[1] *Rev. Médecine*, 1939, **56**, No. 4.

SURGICAL PROCEDURES IN GENERAL PRACTICE

The series of articles under this heading, now resumed, was interrupted in April of this year to make room for a special series on War Wounds and Air Raid Casualties, concluded in our last issue.

FRACTURES OF THE NECK OF THE FEMUR

BY

PHILIP WILES, M.S., F.R.C.S.

Fractures of the neck of the femur are divided into two groups—intracapsular fractures of the neck proper and fractures involving the trochanters. Extracapsular fractures through the base of the neck belong, from a practical point of view, to the trochanteric group. The two groups are widely different as regards both prognosis and treatment.

Intracapsular Fractures

These fractures are seen principally in the elderly, although they may occur at any age. The blood supply of the neck of the femur is never very good, and with advancing years there are often porotic changes that seriously weaken the structure of the bone; it is then liable to fracture with minimum trauma. The fracture is usually close to the head, but it may be at an intermediate position in the neck. A common history is for the patient to trip and fall when walking about the house —there is no need for any more serious accident. The actual fracture may even occur before the patient falls, as from the jar of stubbing the toes; the fall is then the result of the fracture, not the cause of it.

Signs and Symptoms

The fractures are classified into two groups—adduction and abduction. The distinction is of importance, because the former are never impacted, whereas the latter usually are; the prognosis and treatment are therefore entirely different.

Adduction fractures (Fig. 1, left) comprise at least three-quarters of the total number. There is a great deal of pain, and the patient is often left lying where he has fallen until the doctor arrives. The typical position of the leg is one of adduction and external rotation; the latter may be so marked that the outer border of the foot is lying flat on the floor. There is shortening of the limb, which is partly apparent, due to the adduction, and partly real. Real shortening is caused by upward displacement of the main fragment and may amount to anything between one-half and three inches. There is tenderness on pressure over the great trochanter and in Scarpa's triangle, and pain on jarring the heel. Active movements are impossible and passive movements painful.

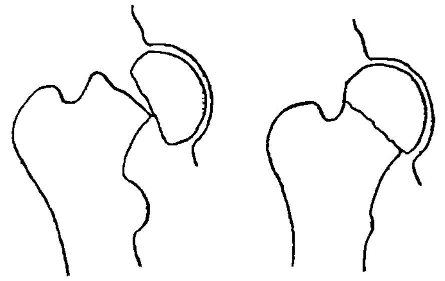

FIG. 1.—Intracapsular fractures. Left: Adduction fracture with upward displacement and internal rotation. Right: Abduction fracture with impaction.

Abduction fractures (Fig. 1, right) occur in about one-quarter of the cases. The pain is much less severe, and it is not at all uncommon for the patient to be able to get up, and even to bear weight, immediately after the fall. As there is almost always impaction of the fragments the limb does not assume the classical position described above. It usually lies with the foot straight or internally rotated, and the real shortening is not more than one inch. There is some pain and tenderness in the inguinal region. Active and passive movements may be possible over a limited range without causing very severe pain. Passive movements must, however, be examined with care for fear of disimpacting the fragments, and for the same reason no attempt must be made to elicit crepitus.

Diagnosis

The diagnosis in a classical case is immediately apparent from the history and the position of the limb. However, when there is not much displacement of the fragments, or when they are impacted, it may be difficult to be certain of the nature of the injury. It is unwise to move the patient too much for the purpose of making elaborate measurements of the bony landmarks because of the danger of causing further displacement. Nor should the patient be told to " try the leg out and see how you get on." Radiological examination must be made in every case in which there is the slightest element of doubt—that is, where an elderly person has had a fall causing pain in the hip. The interpretation of the radiographs may be difficult when the fracture is impacted; therefore films of good quality and in both antero-posterior and lateral planes are required. If first-class portable equipment is not available the patient should be sent to hospital by ambulance. To overlook the fracture may be a major tragedy for which the doctor might possibly be held responsible.

Prognosis

Impacted abduction fractures seldom give much trouble, but an adduction fracture is one of the most serious accidents that can befall an elderly person. In the past it was associated with a very high mortality, and even under modern conditions the death rate is higher than that in most other simple fractures. The patient is often already debilitated, there is some shock, the pain is severe and prevents the patient sitting up, and death ensues from pulmonary and cardiac complications. The risk is greatly diminished if the fracture is reduced at the earliest possible moment, so that he can sit up and move about a little without pain. If the patient survives—and at least 90 per cent. should do so —the prospect as regards the ultimate restoration of function is good. In the great majority of cases it is possible to obtain sound bony union by operative methods.

Treatment

Abduction Fractures.—The fragments are impacted and no attempt should ever be made to improve the position. The principal indication is to avoid disimpaction and ensure that no weight is carried on the leg until there is firm union. Many people have walked with these fractures from the start without coming to any harm, but they are taking a serious risk. The patient is put to bed without any retentive apparatus. Some movement is possible, and he can be propped up at once in the Fowler position to reduce the risk of pulmonary trouble. There is, however, no need to keep him in this position all the time; he can lie down at night, and it is an advantage for him to turn on to the sound side. Later he can be lifted into an arm-chair and taken out of doors in a wheel-chair. After ten to fourteen days the pain diminishes greatly and active movements are begun. Local massage assists in getting rid of any bruising, and general massage is helpful in maintaining the patient's condition. After six weeks a weight-bearing calliper is fitted; it is worn for about eight weeks, until the radiographs show good consolidation of the fracture. The earlier use of a calliper entails more risk because of the difficulty in ensuring that it carries the weight properly. The instrument is hard to fit, especially in fat people. The best type has a " bucket top " in place of the more usual ring; it is made of moulded leather, and laces in front to allow of easy adjustment. The bucket fits under the ischial tuberosity, from which the weight is transmitted down the side bars of the instrument in the shoe. The heel should not touch the shoe, and it carries no weight at all. It is advisable to check personally the fitting of a calliper. This can be done by slipping a finger into the patient's shoe under his heel; he should then be able to transfer his whole weight to the calliper without hurting the finger.

Adduction Fractures.—Treatment cannot be undertaken in a private house unless there is adequate provision of trained nurses and equipment. The great majority have to be transferred to hospital; the sooner this can be done the better the prognosis. Moving the patient on to a stretcher and carrying him downstairs may cause a great deal of pain. Attempts at splinting of any sort are nearly as painful, and are best omitted. The most satisfactory procedure is to give an intravenous anaesthetic, which should last long enough for the patient's transfer to the ambulance; it can, if necessary, be repeated during the journey.

SMITH-PETERSEN NAIL

Nearly every other form of treatment has been superseded by the use of the Smith-Petersen triradiate nail. The operation has a greater significance than setting a fracture usually implies; it is a life-saving measure. Once the fracture is fixed, the patient is free from pain, is able to move and to sit up, and the dangers of prolonged immobilization are removed. It is not a particularly dangerous procedure; there is little operative shock, and age alone is not a contraindication. The operative mortality is so low that it can safely be said that the chance of survival of any but a moribund case is greater with operation than without it.

The methods of introducing a Smith-Petersen nail and individual variations in technique are so numerous that description of detail is of little value. In general, the procedure can be divided into two stages: first, reducing the fracture; secondly, introducing the nail. Reduction at open operation is now almost universally abandoned in favoured of " closed " methods. Some surgeons perform the reduction by manipulation on the operating table immediately before inserting the nail. Others do it by traction while the patient is still in bed. The limb is placed in a Thomas splint suspended from a Balkan beam, and traction is applied by a weight (10 to 15 lb.) attached by adhesive strapping. The reduction is controlled by radiographs, and when the position is satisfactory the nail is inserted without removing the extension.

After-treatment also varies greatly with the surgeon. It is, however, becoming more widely appreciated that weight-bearing before consolidation of the fracture is unsafe—too many cases have occurred in which the pin has broken or become displaced. My own practice is to keep the patient in bed for six weeks. After two weeks, massage is begun and active movements of flexion and extension of the hip are encouraged, but rotation is avoided because the leverage may be great enough to dislodge the nail. It is advisable to wear in bed a shoe with a twelve-inch ruler fixed transversely to the heel to prevent external rotation by the weight of the limb. After six weeks the patient is allowed up in a weight-bearing calliper, which is worn until there is satisfactory radiographic evidence of consolidation. The pin may have to be removed at a later date, but it is not essential to do so unless it starts to extrude itself.

OTHER METHODS

Other methods of treatment may be required in the rare case in which the patient is unfit for operation or in which operation is refused. The choice then lies between fixing the limb in a long plaster-of-Paris spica extending from toes to nipple line (Whitman) and continuous weight traction as used for trochanteric fractures. In both cases radiographic control of reduction is essential. A successful result may be expected in 40 to 50 per cent. of cases.

Ununited Fractures

Non-union may be encountered when operative treatment has been impossible or has been neglected, or when displacement has recurred after operation. A satisfactory functional result is often obtained by osteotomy (McMurray). The femur is divided obliquely below the great trochanter and the distal fragment displaced inwards below the head. A plaster-of-Paris spica is applied and kept on for about three months, by which time union between all three fragments should have occurred. If operation is impossible there is no alternative to the permanent use of a weight-bearing calliper.

TROCHANTERIC FRACTURES

These fractures may occur at any age, but more usually in middle age or later, as the result of direct violence applied to the great trochanter or a rotation strain, or both together. There are two main types: (1) Fractures through the base of the neck or obliquely through the adjacent part of the great trochanter. The lesser trochanter may also be detached. The displacement is seldom pronounced, but there may be external rotation which opens up the gap between the fragments (Fig. 2, left and centre). (2) Comminuted fractures in which the neck seems to have been driven through the great trochanter. There is usually considerable displacement and marked coxa vara (Fig. 2, right).

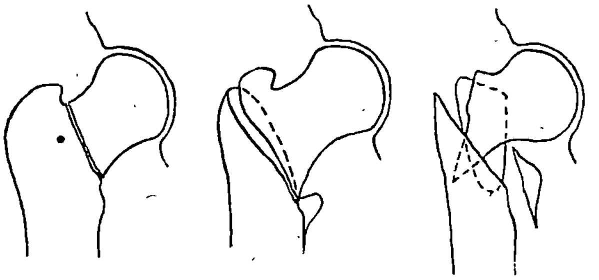

FIG. 2.—Trochanteric fractures. Left: Type 1, fracture through base of neck, without displacement. Centre: Type 1, fracture through great trochanter, with external rotation and detachment of lesser trochanter. Right: Type 2, comminuted fracture.

Diagnosis

On examination there is pain and tenderness over the great trochanter, but the pain tends to be less severe than with intracapsular fractures. There may be external rotation of the limb, and in the second type there is real shortening. The diagnosis is made on radiological examination. Either stereoscopic films or a lateral view is advisable, because in fat people the great trochanter may have fallen into a plane posterior to the neck and yet appear to be perfectly positioned in a flat antero-posterior film.

Treatment

TYPE 1

If there is excessive rotation the displacement is reduced under anaesthesia. Internal rotation is the only movement required; care must be taken not to exert too much traction or to abduct widely, or coxa valga may result. The reduction is controlled radiologically, and then a plaster-of-Paris spica is applied. For the application of the plaster the patient is placed on an orthopaedic table or, if that is not available, on a pelvic rest. In the latter case the shoulders are raised on a platform to the height of the pelvis in order to prevent lordosis. The feet are held by two assistants with the legs slightly abducted and flexed at the hips; about 10 degrees of flexion and eighteen inches separation of the feet are sufficient. The affected hip is kept in internal rotation and the knee of that side flexed 45 degrees. The line joining the antero-superior spines must be perpendicular to the median plane of the body. The bony points are well padded with felt, or the whole area to be included in the plaster may be covered with a layer of wool secured by a cotton bandage. A well-fitting plaster is then applied, extending from the costal margin to the tips of the toes. The sound leg is not included. The plaster must be worn for at least twelve weeks. If weight-bearing is started too soon the neck of the femur may bend at the site of fracture, causing coxa vara. An active patient may be able to get about on crutches after the first week or two.

An alternative method of treatment is the insertion of a short (2½ to 3 inch) Smith-Petersen nail. The operation is easy in experienced hands and does not require any elaborate control of direction. The hip is then protected by a short plaster spica stopping above the knee, and weight-bearing may be begun after a few days. The plaster should not be discarded for about eight weeks.

TYPE 2

The fracture requires reduction because of the varus deformity. The most satisfactory method is by continuous skeletal traction. A Smith-Petersen nail cannot be used because of the comminution. Traction is conveniently applied by means of a Kirschner's wire through the femur; the leg rests in a counterbalanced Thomas splint in a position of full abduction and internal rotation.

The leg is first placed on a Thomas splint of a suitable size; the ring should be large enough not to cause pressure and yet not so large as to get in the way. Strips of flannel bandage four inches wide are folded round the bars and beneath the leg and secured by large safety-pins or paper clips to the outer bar. The splint is then suspended from a Balkan beam, preferably by four cords, one from each corner of the splint. The cords are passed round pulleys and carried to the head of the bed, and weights are attached to counterbalance the weight of the limb. Loose shot in canisters provide a convenient method of varying the weight, which is so adjusted that when the patient moves—for example, to sit up or to use the bed-pan—the splint and limb move with him without effort. The foot is supported at right angles by a foot-piece attached to the splint or by a strip of adhesive plaster on the sole leading to another cord ending in a 1-lb. weight. The foot of the bed is placed on nine-inch blocks so that the patient's weight will provide countertraction.

When the splint is in position a Kirschner's wire is inserted. This can be done under local anaesthesia: an area about one inch in diameter on each side of the leg is freely infiltrated with novocain down to and including the periosteum. The wire is inserted well clear of the knee-joint and its suprapatellar pouch—that is, about two inches above the adductor tubercle. The stirrup is applied and the wire strained as tightly as possible to prevent bending; it should give a very high-pitched note when struck. The cord for traction is attached to the stirrup and passed over a pulley on the lower upright of the Balkan beam.

It is advisable to start traction with a considerable weight, say 25 to 30 lb., so that reduction is effected rapidly. Radiographs are taken after twenty-four hours, and if the position is satisfactory the weight is reduced to 10 lb. A heavy weight must not be used for long without *x*-ray control or it will produce coxa valga. The fragment consisting of the lesser trochanter does not return to its proper position; it joins by fibrous union and does not cause any subsequent trouble. After a week a knee-flexion iron is attached to the Thomas splint in such a position that the hinges are in the plane of the knee-joint. The flannel strips are transferred to this iron and another cord and weight are provided to counterbalance it. Movements of the knee are made at least once daily under supervision; it is possible to obtain, with assistance, at least 90 degrees of flexion. Traction is maintained for twelve weeks or until firm consolidation is shown radiologically—if the weight is removed too soon the varus deformity is liable to recur. With a heavy patient it is advisable to use a weight-bearing calliper for another six to eight weeks.

TUBERCULOSIS IN WAR TIME

DEPUTATION TO MINISTER OF HEALTH

The Minister of Health, Dr. Walter Elliot, on October 27 outlined to a deputation representing the National Association for the Prevention of Tuberculosis, the Joint Tuberculosis Council, and the Tuberculosis Association, at which representatives of the Society of Medical Officers of Health and the London County Council were also present, the steps which had been taken to ensure that tuberculous persons continue to receive treatment while keeping an adequate reserve of beds for air raid casualties.

War-time Accommodation

Dr. Elliot said he was having the greatest difficulty in persuading people that hospital services were available now just as before the outbreak of war. In particular it had always been intended that the anti-tuberculosis services should be maintained in war time. Although some patients had been discharged from sanatoria and other institutions to allow of accommodation for casualties, about two-thirds of the 28,000 beds provided for the treatment of tuberculosis in England and Wales remained available throughout the early weeks of the war for their peace-time purpose, though naturally this proportion varied in different parts of the country. If through some misunderstanding actively infectious cases had been discharged they should be sought out and brought back for treatment.

An instruction issued on October 4 had specially emphasized the importance of the tuberculosis services. A long-term policy was particularly desirable in this field. Steps had been taken to remove any misunderstanding which might have led to the refusal of residential treatment to tuberculous patients in need of it, and also to enable a substantial number of smaller tuberculosis institutions originally included in the casualty scheme to return wholly to their normal functions. This had made available some 5,000 more beds. In addition, as more and more of the hutted annexes to hospitals were completed, so more and more beds at present allotted to casualties would be released.

Other services were also returning to normal. In London, for example, the dispensary services, after an initial lull and difficulties owing to the temporary transfer of personnel, were resuming almost pre-war activity. In some reception areas these services had, indeed, been expanded. He would welcome arrangements between local authorities in any region whereby the accommodation in their various districts might be pooled to enable hospitals to be assigned wholly to casualty or tuberculosis work, and thus avoid, where possible, the mixing of tuberculous and non-tuberculous patients. One such arrangement is already in force in the West Riding of Yorkshire.

The Minister welcomed the efforts of the organizations represented to promote action along these lines. He assured them that the importance of maintaining facilities for the surgical treatment of both pulmonary and non-pulmonary tuberculosis was fully recognized. He was also fully alive to the need for making satisfactory arrangements for the treatment of tuberculous patients in the Army, Navy, and Air Force. This question was at the moment under consideration with the Services.

The Minister welcomed particularly this opportunity of discussing the problem frankly with the representatives of all the different sides of the tuberculosis services. He suggested that they should appoint a small liaison committee which could report to him how the instructions so far given were being carried out and how the steps taken were working in practice. He promised also to consider carefully the other representations of the organizations.

Those who attended the meeting with the Minister were:

Representing the National Association for the Prevention of Tuberculosis, the Joint Tuberculosis Council, and the Tuberculosis Association.—Sir Percival H.-S. Hartley, Sir Henry Gauvain, Dr. R. A. Young, Professor Lyle Cummins, Dr. G. Lissant Cox, Dr. G. B. Dixon, Mr. H. Arthur Baker, Councillor R. W. Brosch, Dr. S. Vere Pearson, Dr. J. B. McDougall, Dr. G. T. Hebert, Dr. Lloyd Rusby, Mr. J. E. H. Roberts, and Dr. J. H. Harley Williams.

Representing the Society of Medical Officers of Health.—Dr. P. L. T. Bennett and Dr. James Ferguson.

Representing the London County Council.—Dr. W. Allen Daley and Dr. A. M. Hewat.

WAR-TIME RADIOLOGY

The British Institute of Radiology, although it has abandoned for the time being its monthly sessional meetings, is continuing its principal functions; its office door is still open in Welbeck Street, the regular issue of its journal is being maintained, and instruction is given under its auspices for the D.M.R.E. Major D. B. McGrigor, the new president of the Institute, on being inducted into the chair at a meeting on October 19, said that it was hoped during the winter, if circumstances permitted, to have a one- or two-day meeting at which the two annual memorial lectures—the Mackenzie Davidson and the Silvanus Thompson—together with the Skinner Lecture of the Faculty of Radiology, might be delivered, but the usual conference held in December, with its attendant exhibition, has had to be abandoned. Many of the members of the Institute are on service at home or overseas, and Major McGrigor gave a word of advice to young radiologists going or expecting to go abroad. He said it appeared necessary to remind young radiologists not to expect in their new environment the ready-to-hand conditions of work to which they were accustomed in the civil hospitals and laboratories at home, where the turn of a tap or the press of a switch instantly brought whatever was required. They must cultivate, he said, a rather different outlook. Their apparatus was, indeed, provided for them, but the convenience of their *x*-ray rooms and dark rooms would largely depend upon their own initiative. In other words, it was left for them to fashion their departments, taking advantage of such conditions or amenities as offered themselves, and relying upon their own resourcefulness and adaptability. They might not know what electrical supply was available, and in all sorts of matters which were taken for granted at home they would come up against primitive conditions, and must be prepared to be handymen, at least during the first month or two.

Reports of Societies

IMMUNOLOGICAL PROBLEMS OF DIPHTHERIA

At a meeting of the Section of Pathology of the Royal Academy of Medicine in Ireland on October 13 the president, Dr. R. A. Q. O'Meara, delivered from the chair his presidential address, "A Critical Consideration of Some Immunological Problems, with Special Reference to Diphtheria."

Dr. O'Meara first considered the two principal experiments supporting the therapeutic value of diphtheria antitoxin—that of Fibiger in Copenhagen in 1898, and that of Roux, Martin, and Chaillon in Paris in 1894. Although Fibiger obtained good results with diphtheria antitoxin he was dealing with such a mild disease that its fatality rate of 12.2 per cent. in untreated cases was no greater than in areas where severe cases were actively treated with antitoxin to-day. There was evidence that the gravis type of diphtheria bacillus was associated with diphtheria in Paris about the time of the experiment in 1894. The French workers gave their results in two groups of cases—"angines" and "croups"—which for comparison with modern figures might be referred to as "non-laryngeal diphtheria with faucial involvement" and "laryngeal diphtheria." In the first group the fatality rate without serum treatment was over 30 per cent. for the period of the experiment. Serum treatment brought the fatality rate down to 12.4 per cent. Figures from the annual reports of Cork Street Fever Hospital showed that in a comparable group of actively treated cases the fatality rates for 1936, 1937, and 1938 were 17.4 per cent., 10.5 per cent., and 11.6 per cent. The dosage in any case in the original experiment did not exceed 8,500 units and was probably not more than 5,000. Against this, doses of 120,000 units or more were given to-day in severe cases. The conclusion would appear to be that there had been no improvement in the treatment of the toxaemia of diphtheria since antitoxin had been introduced, and that modern antitoxin, unit for unit, was less potent than that originally employed. The principles guiding the development of antitoxin in the interval had been mainly directed towards purification so as to ensure the maximum number of units in the minimum volume. The study of clinical efficacy of antitoxin had been relegated to a minor position. The development of diphtheria prophylaxis and other methods of immunization was suffering also by the fact that avoidance of reaction was being made the first criterion for an immunizing agent. The immunologist had become dazzled by the achievements of the chemist in isolating fractions of the organism which had antigenic properties and which could be injected without causing reaction. On the other hand, the work of Pasteur and the pioneers appeared to show that in order to get solid immunity against the causal organism it was necessary to use something very close to the whole organism and not a fraction of it. If the modern tendency continued it might eventually lead to the abandonment of immunizing methods as of no practical worth.

Professor J. W. Bigger said that serologists and immunologists had shown in recent years a tendency to become too academical. The president had pointed out that the results obtained in laboratories must be judged by the results of their application to the human body. It was of value to be reminded that the scientific evidence on which the use of antitoxin was based was slight. There were various reasons for this, but the chief was that from the beginning the treatment had been so obviously successful that few if any physicians had felt justified in continuing to treat control cases of diphtheria without antitoxic serum. There were three distinct types of diphtheria bacillus, which gave rise to differing clinical forms of the disease. The president had made a good case for believing that the diphtheria prevalent in Paris in 1894 was in the main due to the gravis type of bacillus. Diphtheria in Dublin to-day was due to the same type. It would not be true to say that antitoxin was useless in the treatment of diphtheria; it had definitely reduced the fatality rate of both gravis and mitis infections. But the treatment of diphtheria by antitoxin had not improved to the extent which one would have expected.

Professor **Hans Sachs** said that it was impossible to doubt that serum therapy was of value. Antitoxin not only neutralized the toxin but made it disappear altogether from the blood. It was possible to distinguish an antitoxic action and a non-specific action of the serum. The specific and the non-specific actions on the organism were quite different.

Dr. C. J. **McSweeney** said that the president's paper pointed out the limitations of serum therapy in the management of gravis diphtheria. There was no doubt that in Dublin during the last five years the variety of diphtheria had been quite different from that which had prevailed in the British Isles and in Ulster. He showed a chart of the mortality rate which proved that the rate in Dublin was higher than in Cardiff, although the treatment of the disease was exactly the same in the two places. The hallmark of toxic diphtheria was the amount of faucial oedema; other factors were the extent of "bull neck" and the occurrence of haemorrhages into the skin and from the mucous membranes. These constituted the clinical signs of gravis diphtheria. The commercial antitoxin available at present seemed to check the spread of the membrane, but it had little if any effect on the undefined toxic factor. In his opinion 90 per cent. of the deaths happened within ten days of the development of the disease. With a very virulent organism something more potent than the existing antitoxin was required in order to ensure a minimum mortality rate.

Dr. G. C. **Dockeray** said that in 1931 he had tried typing diphtheria bacilli in Dublin and had found that they were predominantly of the gravis type. It was strange that the mitis type, which was haemolytic on culture, should not cause haemorrhagic lesions as a rule, whereas the gravis type, which was not haemolytic, should. Dr. A. R. **Parsons** thought it difficult to know how much antitoxin to give. Some years ago good results had been achieved by the administration of 4,000 or 8,000 units; to-day it was said by some workers that the dosage should not go beyond 100,000 units, but that it was quite safe to give that amount. Was the present antitoxin not so good as formerly? Dr. B. **Moran** referred to the diversity of factors which had to be considered when dealing with the problem of diphtheria. Dr. R. W. **Shaw** said that if a prophylactic known to produce a reaction in children were used it would be difficult to get permission from the children's parents to employ it. Dr. W. **Hayes** remarked that the concentration of antibodies had been a purely technical achievement and little real progress in treatment had been made since the 1890's. In small-pox an attenuated small-pox virus, in which all the elements of the real disease were present, was used as a prophylactic. In measles, immunity was procured by modifying the whole disease. Both methods gave an immunity comparable to the natural one. In diphtheria and in scarlet fever the degree of immunity produced artificially was not comparable with that following the disease itself. Dr. J. **McCann** observed that in the early days serum had been given subcutaneously with very good results; now it was given intramuscularly or intravenously. If the serum was administered in this way a large number of units might be excreted from the blood and lost almost as soon as they had been given; he suggested that serum might be injected subcutaneously as well. Dr. W. P. **O'Callaghan** asked if there was any reason why infants in the maternity hospitals should not be treated with diphtheria prophylactic from birth. Dr. W. G. **Elliott** asked if children inoculated with diphtheria prophylactic were in danger of becoming carriers; if they were they would be a source of danger to other school children. Dr. **Alan Thompson** wanted to know if there was any hope of getting a better serum against gravis, and if gravis yielded a toxin in sufficient amount for the immunization of horses.

The **President**, in reply, said that his object had been merely to show that a problem existed, and not to say that diphtheria antitoxin should not be used in the treatment of diphtheria, or that diphtheria prophylactics should not be employed. Certain cases of severe diphtheria were not amenable to antitoxic therapy in spite of the fact that many alleged improvements had been made since the introduction of diphtheria antitoxin. The existing prophylactics were capable of yielding a high degree of immunity against diphtheria. It was well worth while using T.A.F., but parents should not be told that the child would certainly be protected against the disease. The fatality rate would soar in the absence of treatment with antitoxin. In immunology there had been too great a gap between laboratory and clinical work. There need be no relation between the haemolysis produced by the mitis type on culture and clinical haemorrhagic lesions. The latter would be due to capillary damage and not to haemolysis. In immunization it was important to use the whole organism and not isolated parts or products of it. It was said that infants in maternity hospitals were immune to diphtheria, and if this was so it would hinder the development of immunity from a diphtheria prophylactic. The immunity-forming mechanism of the infant might not be developed at so young an age. Children who received prophylactic inoculations did not necessarily have their tendency to become carriers increased thereby.

Correspondence

War Wounds of the Limbs

Sir,—The publication of Dr. Trueta's inspiring little book on the treatment of war wounds and fractures and the opinions expressed by Mr. R. Watson-Jones in his admirable letter in your issue of October 21 (p. 826) all point to a firm belief in plaster-of-Paris as opposed to other methods of fixation. Böhler's technique and his convincing contributions to the surgery of fractures are responsible largely for the revival and improvement of ancient practice.

It may be useful at the present time to remind students and the younger generation of surgeons that their forefathers had similar beliefs. In my student days Erichsen's *Surgery* was the favourite textbook for those beginning the study of surgery. In vol. i of the tenth edition, 1895 (forty-four years ago), it is stated that the unpadded plaster cast was employed at University College Hospital. Some modification of this was introduced, but there is a condemnation of the padded cast which is written in words almost identical with those of Böhler.

Thirty years ago I practised and published an account of the ambulatory treatment of fractures in plaster-of-Paris, a lesson learned from a visit to St. Thomas's Hospital and to the clinic of Kocher of Berne. Splints such as Carr's splint for Colles's fracture, Liston's long splint for fractures of the thigh, and Cline's splint were never used by my colleagues or myself. They were obviously ineffectual. It was the influence of Sir Robert Jones, and the knowledge of the unrivalled results his followers obtained in the last war, which induced many of us to abandon plaster-of-Paris as a routine in favour of his simple fixation splints. This change-over from plaster to splints was confined largely to war wounds. It is surprising to find how few modern writers understand the admirable extension and fixation which can be obtained when these frames and splints are properly applied. Jones was modest about his own methods; he was thoroughly familiar with those of Böhler and interested in their development and use, but he appeared to avoid plaster when he could.

The late Lord Moynihan used to speak cryptically of "the hypnotic tube" which he inserted after gall-bladder operations. He subsequently explained that he used this term because he slept better when the tube was *in situ*. So it is with Jones's splints. By their use we are relieved of misgivings when we are not quite certain if the application of plaster is free from risk or, if applied, might require quick removal to obtain more accurate position.

I have beside me not only Böhler's and Trueta's books, but also, among others, *The Orthopaedic Surgery of Injuries*, *Injuries to Bones and Joints*, and *Notes on Military Orthopaedics*. These last three volumes are by Robert Jones. May I venture to advise others who are only familiar with plaster technique to include them in their library if engaged in war work.

One important point is mentioned by recent writers but has not been sufficiently emphasized. Wounded soft parts, especially when infected, require the same amount of fixation as broken bones. I drew attention to this in the *Lancet* (1936, 2, 1010) when dealing with the question of infected fingers and hand. In cases of streptococcal lymphangitis I found splinting the arm was essential. Bier's bandage was a help, but stupes, arm baths, etc., were forbidden. We now have the sulphonamide group of drugs as a powerful ally. Conservative treatment with rigid fixation was successful. Mortality too often was the result of too active surgical intervention. War wounds of the limbs are being considered along similar lines. Mr. Watson-Jones mentions that amputation has almost disappeared "from the repertoire of the traumatic surgeon." I do not like the words "traumatic surgeon," but he says very truly, at the end of a most helpful letter: "Amputation—to be performed only when the main artery is destroyed, so that gangrene is inevitable." The possibility of the reconstruction of a shattered limb, by methods which were well tried during and after the last war, must always be remembered by the surgeons working near the front line.—I am, etc.,

Aberdeen, Oct. 24. W. I. de C. Wheeler.

Treatment of Infected Fractures

Sir,—Although a physician and general practitioner, I have just read with the greatest interest and admiration Professor Trueta's description of his treatment of air raid casualties. The technique of such a master of his art, by means of which a mortality of 0.6 per cent. resulted in a series of 1,073 cases, fully justifies your laudatory comments, and if Professor Trueta's method is applied as described by him it does seem as if "the whole treatment of war injuries will have been revolutionized."

At the present time the criticism of the value of Professor Trueta's contribution to war surgery in the letter by Mr. R. Watson-Jones (*Journal*, October 21, p. 826) is singularly unfortunate. The effect of this letter may be to deprive a number of younger surgeons (who have not had any experience of war surgery) of the pleasure and educational advantages of reading the book. Mr. Watson-Jones should remember that the only fair way in which destructive criticism can be effectively employed is when it is supported by rebutting statistics instead of vague generalities. What statistics can Mr. Watson-Jones supply in regard to modern war casualties which can compare with those of Professor Trueta's six deaths in a series of 1,073 cases?

One astounding assertion appears in Mr. Watson-Jones's letter. He states towards the end of his third paragraph that "the crushed and mangled limbs of severe motor crashes, *which differ in no respect from the injuries of modern warfare*, are restored to normal in a very large proportion of cases." No surgeon with any experience of either modern war injuries or those of the 1914–18 war would agree with the assertion which I have italicized. The remainder of this letter is a re-hash of hitherto employed orthopaedic methods, and gives me the impression that Mr. Watson-Jones has not read Professor Trueta's book carefully, and that possibly a further perusal of it may cause him to revise his views.—I am, etc.,

Manningham, Bradford, Oct. 23. A. Hayes Smith.

Psychological Casualties in War

Sir,—Those of us who had to deal with the so-called shell-shock patients in the last war had hoped that something would be done next time to prevent a repetition of the psychiatric illnesses which were lumped together under that unfortunate name. The need for prevention does not require to be stressed. The intense misery of the patients, the infectious nature of the disease, so that it became a serious problem for those responsible for the prosecution of the war, and the unending burden to the community should be sufficient reasons for inquiring if there are any means of prevention available.

From many quarters conclusive evidence has been obtained that in a large number of instances a history of psychiatric illness was forthcoming before enlistment. It is reasonable to suppose that if these patients had been excluded from the Army there would have been fewer psychiatric casualties. It is generally believed that the bodies responsible for the examination of recruits are instructed to inquire into the mental history of the patient, but some of us who are interested in this aspect of illness are beginning to feel that the meshes of the net are too wide.

I have seen recently two persons who would not have been enlisted if attention had been paid to their histories. In one of these there was a prolonged history of repeated failure. He had to be taken from one school to another until when he was 15 his doctor, who had had him under observation for many years, wrote to his father that after due trial he had come to the conclusion that the boy could not stand the strain of public school life, and that all attempts to make him do so should be given up. Thereafter his education was conducted by tutors, and an attempt was made to study for a professional career. After he had passed some examinations his health again broke down, and for about a year before being called up for the militia he was occupied in trying to get it restored. The chief symptoms in each illness have been insomnia, attacks of terror—always worse away from home—severe indigestion, failure of concentration. Though this history and a certificate from a leading physician that the lad was totally unsuited for military service were communicated to the board, nevertheless the boy was passed fit for military service. The other patient joined the Territorials a year ago, and broke down with acute nervous symptoms about ten days after the outbreak of war. His history, though not so marked, has many incidents in it of minor nervous illnesses throughout his life. One accustomed to the study of psychiatric histories would certainly have suggested further investigation before he was accepted.

Even two swallows do not make a summer, and I have to admit that these are my only two specimens of the bird. But in conversation with my colleagues I have found that they also have been finding other examples. There must be many others.

It would be a great kindness if you, Sir, would afford me the hospitality of your columns to get this question investigated. If those of your readers who have knowledge of similar cases could send details to me at St. John's House, Smith Square, S.W.1, it might be possible to find out whether this is a serious problem or not. If these psychopaths are being generally enlisted, then we are doing our best to provide many occupants for psychiatric beds, not only because of the numbers actually enlisted but also because of the highly infectious nature of hysteria.

I am not suggesting a remedy for this state of affairs until I know something of the magnitude of the problem, but publicity may induce those responsible to realize that it is not unimportant.—I am, etc.,

London, S.W.1, Oct. 30. T. A. Ross.

Psychological Treatment Centres

SIR,—A perusal of your correspondence columns recently, as well as those of a great diurnal contemporary, suggests that the zeal of some of our colleagues with a passion for psychotherapy may be undermining their judgment. It is natural that in their desire to be useful in this war, being baulked in their aspiration to treat the arch-dictator himself, they tend to exaggerate the importance of their possible part in the national effort. I am not sure that it is a good thing to advocate the setting up of "psychotherapeutic centres" throughout the land, unless these are to function as components of general hospitals; partly because the divorce of psychotherapy from general medicine is apt to have as its consequence a divorce from sanity, and partly for reasons connected with the following considerations.

A battle-cry for the rallying of psychotherapeutic centres may not have the reassuring effect on the public mind that is intended. It is reminiscent of a memorable saying of Dr. Edward Glover's, whose vision some years ago of a "solid phalanx of child analysts" aroused emotions in our hearts closer to the Roman associations stirred by the metaphor than its author could have desired. There is a risk at the present time of creating a national hypochondriasis by too wide advertisement of emergency psychotherapy, with its implications that many people are in special danger of breaking down under war conditions. The article by Dr. S. Barton Hall in your issue of October 21 (p. 801) shows the same general tendency. The cases he records and attributes to the pressure of war industry are not different from many that we have all encountered in times of peace. It would be a pity to encourage the belief that such cases are likely to be specially frequent now. The fact that these particular patients broke down so soon after engaging in war work points to their being special cases, ripe for a breakdown in any event. I have rarely seen a patient in whom overwork alone or principally was the cause of an illness of this type.

There are arguments even for thinking that mental breakdowns of any sort may be fewer in the civil population than during peace. Thus in the last war admissions to mental hospitals of females as well as males showed no increase, but rather the reverse. I have never heard of any data which purported to show a rise in psychoneurotic and minor psychotic illness, not admitted to mental hospitals, during the years 1914–18. On the other hand, I have met a number of "neurotic" people who were better during these years than before or since.

Moreover, on general grounds, which it would be tedious to detail here, there are reasons for expecting an improvement in the mental morbidity rate of the nation during a war. The only potential cause of a notable increase in the incidence of psychoneuroses among the civilian population is that from air raids; and even this, on the evidence of the only Spanish psychiatrist whose experience has been recorded in your columns, Dr. Mira, is possibly a mirage.

Dr. Geoffrey Evans (October 7, p. 742) has advocated that doctors in general should examine themselves and their own mental attitude at the present time. Psychotherapists of all sorts might take more comprehensive stock of the problems from a psychiatric angle if in addition they were to read Sir Robert Hutchison's address at the Canadian Meeting of the British Medical Association on "Hypochondriasis, Individual and National."—I am, etc.,

Matlock, Oct. 21. R. D. GILLESPIE.

SIR,—The essence of psychological treatment centres as suggested by me (*Journal*, October 7, p. 743) was that they provided immediately all the necessary arrangements for ensuring early contact between therapist and civil casualty—will Dr. W. Mayer-Gross (September 30, p. 701) and Dr. R. Louis Rose (October 21, p. 829) kindly note?—and this in a way which no existing national organization could.

I am grateful to Dr. R. F. Fidler (October 14, p. 783) for so helpfully calling my attention to the opening of psychiatric clinics in out-patient departments of general hospitals, but the phobic need of potential psychotics, who in point of fact avoid such clinics, calls for centres with a more euphemistic title and more accessible venue. If after six weeks the profession as a whole is unaware of this Ministry of Health scheme, is it likely that the lay public will know? And when they know, will they not get the grim impression that secret arrangements were being made for ensuring their mental detention rather than their psychological freedom? The Barcelona experiences indeed point to the coming urgency for psychotic psychiatry, but also for the early establishment of preventive centres. Why wait till the chain breaks here too? Would it not be wiser to strengthen the weak links at once to preserve the chain's integrity?

The kindly notice of my plea by Sir Walter Langdon-Brown (October 14, p. 783) warned the profession that if it did not organize for psychotherapy now the authorities might disastrously let pass this valuable opportunity for launching a long-needed National Service. We can only have such organization either (A) from without or (B) from within. Scheme A at the dictation of an authoritarian political Ministry would be foisted forcibly on an unready profession when emergency acutely demanded that something be done quickly and in wholesale manner. Such a scheme would grow on us by accretion absorbing us along beautiful bureaucratic lines, uniform but unalterable, growing—but only as crystals and dead minerals grow—to embalm fossil Medes and Persians. Scheme B must be the outcome of voluntary co-operation in a comprehensive plan evolved among ourselves by co-ordination of living nuclei into related groups within the profession, a scheme growing by intercalation of outside material, growing not perhaps in such straight lines but growing as living organisms grow by preserving both integrity of life and inherency of adaptation. The "enlistment" suggested by me is a voluntary process under Scheme B, but until the Central Emergency Committee of the B.M.A. or some correlative body sees fit to ask all active psychotherapists to enlist *as such*, Scheme B cannot begin to function, as Dr. R. Louis Rose aptly (October 21, p. 829) pointed out.

It is asking too much of authoritative psychiatry to supply all the requirements of this new and gigantic psychological situation. The "no man's land" in psychopathology is as yet unexplored by official guides and unmarked on official maps. Scheme A at this juncture would have too many scotomata. After this war there will have to be a specific diploma in mental analysis, but meanwhile in the preparation of an itinerary every pioneer must be called in, every discovered tract must be marked in, and all this must be done now.

There is one notable precedent in medical history for the formation of local treatment centres as under voluntary Scheme B. During the distracted period of the Great Plague in the autumn of 1665, when all measures of official appeasement had failed to stop the spread of the epidemic, the poor apothecaries of London, the first "general practitioners," courageously remained in the "danger zones" when the theorist physicians and barber-surgeons had removed to safer areas. National acknowledgment came later when a Royal Charter of Incorporation of the Society of Apothecaries set the seal of public approval on their practical and humanistic efforts. Perhaps—who knows?—the Society of Apothecaries itself will come forward and offer to regulate and co-ordinate "Psychological Treatment Centres" in this grave hour of the nation's newer and stranger peril.

While early Rome slept, lulled into security by the comparative absence of frontal attacks and the safe silence of its black-out night precautions, barbaric Germanic invaders were secretly scaling into its strongest fortress because the cocksure sentries on that hill were fast asleep. It was a "mere goose" who saw the danger and issued the call. Civilization was saved—that time. Our "citadel" is being insidiously invaded on one of its strongest hills, and if a mere goose can but arouse all the psychological sentinels to man the mental walls at once that goose would willingly make way for more proper gander!—I am, etc.,

A. C. D. TELFER,
Walthamstow, October 22. M.B., B.S.Lond., L.M.S.S.A.

Treatment of Pulmonary Oedema from Gas

SIR,—I have read with interest Dr. H. L. Winter's suggestion as to the possible value of calcium salts in the prevention of pulmonary oedema in gas casualties (*Journal*, October 21, p. 828). I had previously considered the possibilities of these salts in this connexión, and had formed the opinion that their value was problematical.

The observations of Gold (*J. Pharmacol. exp. Therap.*, 1938, **34**, 169; and *Arch. int. Med.*, 1928, **42**, 576) that in the control of experimental pleural exudates large doses of calcium were required to inhibit the effects of moderate irritation, while intense irritation was not appreciably influenced by even large doses of calcium, indicate that calcium salts would in all probability be valueless in the severe cases in which theoretically they were most indicated—a probability in accord with my experience in other acute inflammatory manifestations. Transience of action would render calcium salts valueless in the prophylaxis of pulmonary oedema, as in the prophylaxis of other inflammatory lesions, while in their therapeutic application in the less severe cases early, adequate, and continued dosage is essential if any benefit is to follow. In the absence of experimental evidence confirming the value of calcium salts in severe pulmonary oedema in gas cases, the possible limitation of this therapy must be realized.—I am, etc.,

Newcastle-upon-Tyne, Oct. 24. A. E. W. MCLACHLAN.

Treatment of Eye Injuries from Gas

SIR,—In a recent paper in the *Journal* by Mr. Arnold Sorsby (September 23, p. 641) and a still later one by Colonel E. M. Cowell (October 14, p. 778) the use of a 2 per cent. solution of bicarbonate of soda as an eyewash is recommended against mustard-gas irritation, and this appears to be generally accepted as the standard treatment in this country.

From lack of opportunity to make any comparative tests I cannot give a personal opinion on the relative value of any substitute or alternative remedy, but I venture to draw attention to a paper by Dr. Georges Bonnefon, an ophthalmic surgeon of Bordeaux, in which from a large experience gained in the great war (1914–18) he advocates the use of a saturated solution of sodium sulphate (800 parts) mixed with 200 parts of syrup of sugar. He claims that any sufferer, if provided with this in a pannikin and a pad of non-medicated absorbent cotton-wool, can lave his eyelids or even douche the eyes himself (unless too tightly closed by swelling) with less need for assistance in bathing by orderlies or other overwrought attendants. The lotion should be renewed every few hours, since it becomes soiled, and, indeed, when loaded with secretion becomes an irritant itself after repeated use. If the sufferer has reached a hospital where an eye-bath can be provided the treatment can be made more efficacious and penetrating with the lotion lukewarm. But the principle to be aimed at is to encourage the escape of the tears and on no account to bottle up them or the pores of lid glands by the use of ointments to the lid edges.

Whether the syrup has any chemical advantage against "l'ypérite, ou sulfure d'éthyl-dichloré," as the French call it, is not stated. It may possibly make the solution more tenacious, but it would be interesting to know whether it is essential, since sugar might be rationed if in greater demand than Glauber's salt. Moreover, one ingredient instead of two makes for simplicity in preparation. The value of the local application of a strong solution of sulphate of magnesia in reducing inflammatory swelling is well known, and I suggest that it might be worthy of trial in mustard-gas irritation. Like Sorsby and Cowell and others, Dr. Bonnefon condemns the use of cocaine as a local anaesthetic in the above cases on account of its tendency to cause desquamation of the corneal epithelium. In its place he advises butelline. But as a less transitory and more efficacious analgesic he prefers a 2 per cent. solution of dionine. His original paper appeared in the *Gazette hebdomadaire des Sciences médicales de Bordeaux*, No. 11, March, 1939, entitled "L'Œil Ypérité: son Traitement."—I am, etc.,

Edinburgh, Oct. 16. GEORGE MACKAY, M.D., F.R.C.S.ED.

SIR,—In his interesting paper on ophthalmic services to the civil population in national emergency Mr. Arnold Sorsby states (*Journal*, September 23, p. 641) that experimentally immediate irrigation after the application of liquid mustard gas to the cornea is of no value. Would Mr. Sorsby very kindly say if liquid mustard gas is soluble in any vegetable fat such as olive oil or castor oil, and if any experimental work has been done on the value of immediate use of any such solvent which is harmless to the eye?—I am, etc.,

Oct. 10. AN OCULIST SOMEWHERE IN FRANCE.

⁂ We print below Mr. Sorsby's reply. The subject is also dealt with in a leading article at page 915.—ED., *B.M.J.*

Liquid mustard gas is fat-soluble. I do not know of any experimental work to test whether irrigation with oil is more effective than irrigation with bland lotions in overcoming the instantaneous damage to the cornea from liquid mustard gas. Seeing that mustard gas is a "persistent" substance and that inevitably a film of oil containing dissolved gas remains on the cornea after instillation into the conjunctival sac, it does not appear desirable to use oily substances in the treatment of eye injuries from gas. This view has recently been forcibly put forward by Bonnefon (*Gaz. hebd. Sci. méd.*, 1939, **60**, 168, and *Siècle méd.*, 1939, September 1). It is, moreover, doubtful to what extent animal experiments can be applied without considerable reserve. There is some evidence that during the last war eye injuries from gas were more serious in horses than in men, and it has been suggested that the more severe course in animals might be due to the absence in them of lacrimal secretion and its defensive mechanism. On this view frequent irrigation with bland lotions or with hypertonic solutions (such as saturated solution of sodium sulphate 800 grammes, solution of glucose 200 grammes) to induce osmosis has been advocated.

Prevention of Tuberculosis

SIR,—The National Association for the Prevention of Tuberculosis has decided to devote its activities in war time chiefly to propaganda and the care and rehabilitation of tuberculous patients and their families. Tuberculosis was a grave problem during and after the last war, when the death rate rose to the level at which it had been ten years previously. Overcrowding, food shortage, and general anxiety no doubt caused this result, and the position was infinitely worse in Austria and Germany. The disease affects the military as well as the civil population, and the National Association takes the view that tuberculosis is as much a casualty of war as a wound.

The National Association has a large number of affiliated care committees throughout the country. It is hoped to encourage them in their work by periodical visits from an expert adviser. The position at the moment is complicated by the fact that owing to the need for vacant beds sanatoria and hospitals for the tuberculous have been evacuated of their patients, in some areas very largely. The Ministry of Health has the position under review, and statements from the Minister in Parliament give ground to hope that some beds will shortly be liberated.

The Burrow Hill Sanatorium Colony in Surrey, which has accommodation for eighty-six tuberculous youths, who receive treatment and training, will be kept open, and there are at present a few vacancies.—I am, etc.,

Tavistock House North, Tavistock Square, W.C.1, Oct. 24.
HARLEY WILLIAMS, Secretary-General.

Care of the Tuberculous in War Time

SIR,—In his letter in your issue of October 28 (p. 882) Mr. Somerville Hastings states, with reference to the London County Council, that the impression that the Public Health Department has virtually disappeared is inaccurate. In fact, "one has only to mention the Council's responsibility for the civilian sick, the maternity service, the treatment of venereal disease and tuberculosis, and for general public health to realize the extent of the work still being done at County Hall." Yet the position of the tuberculous patient, whether newly diagnosed or partially treated, is a source of concern to many of us who are called upon to give advice at the present time.

At the outbreak of the war most of the county and L.C.C. sanatoria were partially evacuated and the major proportion of the beds were left empty; it is even possible that some of these beds have already been occupied by non-tuberculous civilian sick. This action, taken during a state of national emergency, is bound to lead in due course to certain inevitable consequences. First, a large number of patients with open pulmonary tuberculosis have been dispersed among the general population, and the incidence of phthisis will therefore shortly increase. Secondly, there are much-reduced facilities for the treatment of freshly diagnosed patients, who will in many cases not be able to commence their treatment until the disease has already advanced beyond the early stage at which the prognosis is reasonably good.

While it is everywhere recognized that the Emergency Hospital Service must have plenty of beds at its disposal, it is most dangerous to the community that the supply should be drawn from the tuberculosis service. Not a single one of these beds can be spared. The control of phthisis has taken many years to reach its present state of partial accomplishment, but the slightest neglect will result in a severe setback. It is also false economy. For many years to come the nation will have to pay, both in money and in precious lives, for any present failure to maintain our hold upon the disease.—I am, etc.,

London, W.1, Oct. 28. JAMES MAXWELL.

⁂ A deputation to the Minister of Health on this subject is reported at page 922.—ED., *B.M.J.*

X-ray Examination of Militiamen

SIR,—The question of the radiographic examination of militiamen has been raised in your columns by Dr. J. V. Sparks, and has been the subject of subsequent correspondence. The last letter on this matter, from Dr. Gregory Kayne (*Journal*, October 7, p. 745), brought up several points for discussion. I have waited in vain hoping that Dr. Sparks's abler pen would reply to these, but now, *faute de mieux*, I am writing myself.

The first and most important matter is that of the so-called miniature radiography, which Dr. Kayne asserts to be "still on trial and considered as unreliable by several authorities." This may be so, but it is also considered quite reliable by many other authorities. Personally I was unconvinced of the utility of this method until I had worked at it myself, but I am now sure that it should occupy a well-deserved and recognized place in our public health armamentarium. The result of my work was published in *Public Health* (September, 1939), where a brief résumé may be found of some of the results obtained by examining a comparatively large section of the populace.

Since publishing this paper I have been interested to learn that Messrs. Philips of Einhoven, Holland, who have very extensive factories, have used this method not only on their workmen but also on their workmen's families, with a resultant saving to the firm, after all expenses of the examination have been paid, of several thousands of pounds a year. This saving has been effected by the early detection of disease, with a resulting decrease in the amount of time spent on sick leave. I think it is not going too far to say that what is good business for a private firm in this matter must be good business for our community as a whole.

It must not be supposed that this method of examination is quite as accurate as a full-sized *x*-ray film, and the most that I claim for it is that it will pick out a large number of actual or doubtful cases that will be missed altogether by an ordinary screen examination. Such cases should be confirmed or otherwise by a routine *x*-ray examination later. It is interesting to note that the film cost for examining a thousand men by miniature radiography is approximately £2 8s. Whether some such examination should be carried out by physicians or radiologists must be a matter for local determination. Some localities have expert radiologists and not-so-expert physicians, while in others the converse may hold. Suffice it to say that there are in this country enough efficient doctors to carry out this work adequately, and to the satisfaction not only of the public health but also of the military authorities.

I apologize for my prolixity, but the subject is both extensive and, at the present time, important.—I am, etc.,

Newton Abbot, Oct. 24. A. ROBINSON THOMAS.

Treatment of Venereal Disease in the Field

SIR,—During the 1914-18 war there occurred among British troops 400,000 cases of venereal disease. These men were evacuated from their units and sent for treatment to a special V.D. hospital at the base. In consequence they were away from the field for many weeks—sometimes months. It is a matter of common knowledge that there were numerous instances of men deliberately acquiring venereal disease so as to avoid the dangers of the firing line. It is as an effort to prevent so far as possible this wastage of men that I put forward the following suggestions.

With modern methods of treatment there is no reason whatever why a man suffering from syphilis up to the end of the secondary phase, or from acute anterior gonococcal urethritis, should be evacuated from his divisional area. Such patients can be adequately treated within that area in a field ambulance, a C.C.S., or preferably by a special divisional V.D. unit consisting of an officer experienced in venereal disease and six orderlies. Such a unit might be attached to a C.C.S. It would, of course, require to be provided with the means of carrying out microscopical investigation for *T. pallidum* and the gonococcus.

For the treatment of syphilis the intravenous arsenical should be one such as stabilarsan, which is already in solution in the ampoule. A "914" powder preparation may also be used, the solvent consisting of an ampoule of sodium thiosulphate, so countering any difficulty that might arise in obtaining sterile distilled water. The arsphenamine injections should be given thrice weekly (say, on Monday, Wednesday, and Friday) in doses of 0.25, 0.30, and 0.45 gramme, making a total of 1 gramme in each seven-day period. The bismuth agent should be a liposoluble one, given intramuscularly twice weekly, the total amount of bismuth metal being not less than 0.2 gramme per week.

Though not normally an advocate of the concurrent intermittent method of therapy, I am of the opinion that in the special circumstances—treatment in the field—that method should be adopted. The schedule I suggest is:

Unit Course

Week	Arsphenamine (gramme)	Bismuth (gramme)
1	1.0	0.2
2	1.0	0.2
3	1.0	0.2
4	1.0	0.2
5	1.0	0.2
6	1.0	0.2
7	1.0	0.2
8	1.0	0.2
9	—	0.2
10	—	0.2

Eleventh to fifteenth week, patient returns to duty.
Sixteenth to twenty-fifth week, repeat unit course.
Twenty-sixth to thirtieth week, patient returns to duty.
Thirty-first to fortieth week, repeat unit course.
Forty-first to forty-fifth week, patient returns to duty.
Forty-sixth to fifty-fifth week, repeat unit course.
This is followed by serological examination every three months for two years.

The above represents adequate treatment and, when carried through, results in 100 per cent. cure rate. The man is not only rapidly rendered non-infectious, but even while he is under ambulant treatment he can in an emergency be sent, without danger to his comrades, to rejoin his unit in the line.

The proved efficiency of sulphapyridine (M & B 693) in the treatment of gonorrhoea renders the evacuation of such cases to the base quite unnecessary. The following routine, which has proved so successful at Whitechapel Clinic, can just as efficiently be carried out in the field.

Week 1: Tablets of sulphapyridine, 3 grammes daily. Posterior irrigation with potassium permanganate, 1:8,000.

Week 2: Tablets of sulphapyridine, 2 grammes daily. Posterior irrigation with potassium permanganate, 1:8,000.

If progress is satisfactory—no urethral discharge and urine clear—at the end of Week 2 stop treatment; otherwise continue treatment for Week 2 for a further seven days.

Week 3: Daily observation for three days, then tests for cure. Satisfactory results have been obtained without irrigations, but there should be no difficulty in carrying out these in the divisional area.

A certain small proportion of cases will of course develop complications due to the disease or to treatment, and these would be the only ones requiring evacuation to a special base hospital. Men on leave or proceeding to join their units in France found to be suffering from venereal disease should not be hospitalized in England or at the base, but as soon as they are non-infectious should be transferred for further treatment to their divisional area.—I am, etc.,

E. T. BURKE,
Oct. 23. Director, L.C.C. (Whitechapel) Clinic.

Organization of First-aid Posts

SIR,—Recent excellent articles in the *British Medical Journal*, the short experience of the working of these posts by medical officers attached thereto and the A.R.P. medical officers, together with the firm front shown by the B.M.A. as to the payment of doctors, raise the question, Should the Ministry of Health not now assume entire control of and responsibility for the casualty services? Why dissociate such services which during a war are intimately connected with the hospital service? While the training of first-aiders and auxiliary nurses might well be left to the local authorities (and here I would plead for a higher standard) I certainly think that the control of the casualty services is best out of the hands of local authorities. For this there are many reasons into which I need not enter. Regarding the organization of the services I submit the following points for consideration:

(1) *Training and Recruitment.* As now, but councils to have the option of conducting their own courses and examinations, with presentation of certificates.

(2) *Administration.* The A.R.P. medical officer to be commandant of all the first-aid posts, personnel, equipment, arrangement of classes, and allocation of all personnel (doctors, nurses, matrons-in-charge, first-aiders, and stretcher-bearers). His decision to be final.

(3) *Collective Training.* This should be done by the commandant with brigade officers of the B.R.C.S. and St. John Ambulance.

(4) *Medical Officers to the Posts.* These to receive the present honorarium plus a sessional fee during a raid. They are there purely for the medical and surgical skill necessary. Most of them are general practitioners and cannot give time to collective training. The commandant should have power to call others.

(5) *Nurses at Posts.* The Government allows one trained nurse only for the first-aid room. What use would one nurse be for 50 to 100 casualties at a post? If in collective training and manning of posts there are to be three shifts of eight hours each, why should one of the most important grades of helpers be so reduced? The types of casualties to be met with demand at least one nurse for each room—the first-aid, reception, and resting rooms. In each a nurse may be occupied for some time on only a few cases. If she has to be useful for the more serious ones it is essential there should be some assistant nurses, and it is desirable before chaos occurs that the Ministry should give definite permission for these. In the mobile unit at least two trained nurses are necessary for shift work.

(6) *Decision on the Spot.* I cannot agree that ambulance men should have this responsibility—that is, of deciding where the case is to go. As a rule the best men fight shy of this because they do not attend to the casualty on the spot, which is done by the first-aid party. These contain the cream of the first-aiders and their leader is a chosen man. In the absence of a doctor, a trained or assistant nurse, the leader must give the order, and in his absence No. 1 of the stretcher party.

(7) *Mobile Units.* More use of these should be made. They are cheaper than heavy expenditure on the conversion of buildings (schools, etc.).

(8) *Posts at Hospitals.* I am of the opinion these should not be at any hospital. Let the out-patient departments carry on and during any raid let them treat what casualties come.

(9) *Gas Casualties.* These should not be taken to a hospital unless special means are provided for them. Special mobile vans, equipped with a bath and spray, should be fitted up so that the gas casualties can be immediately treated on the spot and the clothes decontaminated in a solution in special bins. The vans and bins are taken to a special area afterwards for decontamination by a special squad, and the inside water tanks replenished.

(10) *Equipment.* The surgical equipment for the posts is meagre. Ether should not be used there with so many chances of danger. Morphine, nembutal, and chloroform (safe, given on lint, for analgesia) should suffice. One table to lay a patient on is absurd. It is easy and cheap to have heavy wooden props, which won't tilt, to hold the handles of stretchers so that nurses and first-aiders are not constantly on their knees to dress cases.—I am, etc.,

Oct. 17. "CASUALTY SERVICE."

Diabetes and Renal Disease

SIR,—We feel that Dr. K. E. Barlow's article on diabetes and kidney failure (*Journal*, October 14, p. 765) cannot be let pass without comment, as the conclusions drawn are so contrary to all previous experience of diabetes. He describes two cases in insufficient detail to make a full critical discussion by us possible, but certainly Case II seems to present a picture of heart failure rather than uraemia, and there is no clear evidence of diabetes; the slight abnormality in the blood-sugar curve is most likely due to previous vomiting and ketosis. Dr. Barlow's conclusion that nephrosclerosis lowers the renal threshold for glucose is the exact opposite of our own and other experience, where renal sclerosis is mostly associated with a high threshold. He further suggests by some process of reasoning obscure to us "that the mild diabetic is better off with nephritis than without it." We entirely disagree with this baseless statement because, while there is adequate means of dealing with diabetes both mild and severe, there is no means of checking the inevitable progression of nephrosclerosis.—We are, etc.,

R. D. LAWRENCE,
W. G. OAKLEY.

The Diabetic Clinic, King's College
Hospital, London, S.E.5,
Oct. 30.

Urethrography

SIR,—May I refer to the letter of Dr. Paul Cave and Dr. G. L. S. Konstam (*Journal*, October 14, p. 786), whose comments on my article on urethrography were of particular interest to me. The constant-stream technique is of value in viewing the urethral canal under the screen. This may be done with the glass syringe. Using the syringe, however, one does not always get a film of the prostatic urethra in a distended state, but one does see the prostatic urethra in outline. This gives an entirely satisfactory picture in all but a few specific cases. By a manometric method the larger amount of fluid injected, the added difficulties, and the elaboration of technique are apt to vitiate rather than improve the value of the urethrogram. Moreover, the moving stream implies a moving urethral wall, and this clouds the *x*-ray photograph.

As for the prone position, this does not in fact bring the posterior urethra any closer to the *x*-ray film. Moreover, the technique of injecting the fluid with the patient in this position requires acrobatic contortions and difficult prestidigitations to which the ordinary urologist is somewhat unaccustomed.

The use of urethrography as a method of estimation of residual urine would necessitate the initial filling of the bladder with as much, at times, as two or more pints of lipiodol. This is expensive. It would also necessitate the use of logarithmic tables to convert the inches of the shadow into the ounces of the fluid. This is inexact.—I am, etc.,

London, W.1, Oct. 26. JAMES KEMBLE.

Mental Health of Children

SIR,—Under this heading in your issue of October 28 (p. 880) a statement which is perhaps capable of misinterpretation was made with regard to the Children's Department of the Tavistock Clinic. We should be grateful if you would allow us to point out that the practice of the Tavistock Clinic, in both the adults' and children's departments, does not now vary from pre-war days. We believe that it is therapeutically sound for everyone to pay what he can for treatment, and, where possible, we ask patients to pay a minimum fee of 3s. for a treatment interview. Under war conditions this policy is unchanged.

The risk of confusion arises from the fact that during war time a group of psychotherapists are separately carrying out private work in the same building at ordinary consulting fees. —I am, etc.,

A. T. MACBETH WILSON, M.B., Ch.B.,
Acting Medical Director.

The Tavistock Clinic, Westfield College,
Kidderpore Avenue, Hampstead,
N.W.3, Oct. 30.

Universities and Colleges

UNIVERSITY OF OXFORD

The clinical sub-dean of the Medical School, Oxford, announces that the quota of foreign refugee doctors at the Radcliffe Infirmary is now full, and that no further applications can be considered at present.

UNIVERSITY OF CAMBRIDGE

Diploma in Medical Radiology and Electrology

Owing to the national emergency it has been decided to shorten the present course from nine to six months and to hold examinations on the following dates: Part I, December 19, 1939, and April 10, 1940; Part II, April 9, 1940, and July 9, 1940. There will be no examinations for Part I in February and July, nor for Part II in October, 1940.

UNIVERSITY OF LONDON

BRITISH POSTGRADUATE MEDICAL SCHOOL

The following candidates have been approved at the examination indicated:

ACADEMIC POSTGRADUATE DIPLOMA IN CLINICAL PATHOLOGY.—Alice Benjamin, J. S. B. Bray, J. J. Dubash, S. Sivasankara Pillai.

On September 28 the degree of D.Sc. was awarded to T. C. Angus (London School of Hygiene and Tropical Medicine).

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a meeting of the Royal College of Physicians of London, held on October 26, with the President, Sir Robert Hutchison, in the chair, Dr. H. L. Tidy and Sir Adolphe Abrahams were re-elected members of the Committee of Management, Sir Comyns Berkeley a representative on the Central Midwives Board, and Sir William Willcox a member of the Poisons Board.

Licences

Licences to practise were conferred upon the following 297 candidates (including thirty-nine women) who have passed the final examination in medicine, surgery, and midwifery of the Conjoint Board, and have complied with the necessary by-laws:

F. Abadir, J. J. Ll. Ablett, A. J. Abraham, G. H. Adams, P. S. Adler, C. D. Alergant, L. L. Alexander, O. P. Allcock, R. H. Anthony, F. R. Aston, F. A. S. Austen, R. C. Baird, H. M. Balfour, D. A. Barley, Rotha H. Barnfield, T. E. Barwell, G. A. Beck, A. L. T. Beddoe, Eileen M. Benison, G. Beven, A. Bloom, D. W. Boatman, D. C. Bodenham, Norah H. Bore, C. F. Bose, A. R. Bradley, J. B. Bramwell, O. B. Brears, M. O. Brigstocke, C. A. Brockbank, B. N. Brooke, H. P. Brown, P. P. Brown, C. E. Brownridge, M. R. Bull, W. W. Burnett, Phyllis Burvill-Holmes, Alice M. F. Butterworth, R. F. Butterworth, J. G. Byrne, E. M. Calvey, P. S. G. Campbell, B. E. Camus, R. U. Carr, R. A. M. Case, J. E. Cawthorne, C. A. Cheatle, A. A. Clay, L. G. Clayton, W. T. K. Cody, P. C. Collinson, Beatrice Colvin, Ruth M. Colyer, R. S. Cox, Mary Crago, R. Crawford, G. D. Cribb, J. D. Cronin, T. H. Cullen, K. Damodaran, H. A. Davidson, E. R. Davies, F. W. T. Davies, J. N. P. Davies, W. O. Davies, R. L. G. Dawson, Ina J. Dennis, F. A. Denz, P. J. De Vescovi, R. A. B. Dickson, J. W. Doupe, J. R. Dow, Margaret S. Drinnan, M. B. Dworkis, H. Dyson, J. E. G. Earle, A. K. Eastwood, D. A. J. Ebrill, H. D. Eddy, P. K. D. Edmunds, Evelyn M. Eldrid, E. L. Ellis, H. V. W. Elwell, J. R. Elwell, T. D. V. England, A. E. J. Etheridge, M. O. Evans, I. S. Eve, Enid J. Fair, B. E. Finch, D. Feldman, F. J. Fish, G. R. Fisk, Joan M. Foss, A. J. Freese, Lilias M. P. Gairdner, Gwladys Garfield, I. B. Gartside, M. R. Gaster, P. H. G. Gell, E. Gibbon, F. J. Gillingham, C. V. Gledhill, J. Gluckman, N. H. H. Golledge, L. C. L. Gonet, D. J. H. Goodhew, J. H. Gould, G. H. Grant, M. J. Greenberg, B. G. Gretton-Watson, G. C. Griffiths, R. G. Griffiths, J. A. G. Gulliford, C. Halamandres, J. Halstead, J. M. Hamer, J. K. Hampshire, A. G. Hardy, Freda M. O. Harries, T. H. Harrison, J. R. Hart, R. H. R. Hartley, S. F. Husain, G. C. Haslam, P. S. Hawkins, A. F. Hayden, S. T. Hayes, E. G. Herzog, S. L. Hetherington, W. S. Higgs, S. W. Hinds, E. Hirschowitz, H. E. Hobbs, Elizabeth M. Hollands, Portia G. Holman, Jean M. Holtzmann, W. F. Hooton, A. M. Horsnell, C. R. Houghton, H. Houghton, J. C. Houston, D. R. S. Howell, J. S. Howitt, A. Hughes, E. B. Hughes, H. O. Hughes, J. G. Hughes, I. Illingworth-Law, E. V. Irwin, R. H. Isaac, J. A. James, J. W. M. K. Jayewardene, J. R. F. E. Jenkins, H. B. Jones, Megan E. Jones, O. H. Jones, P. H. Jones, F. E. Joules, Joyce A. Keeping, G. W. Kennedy, R. D. Kennedy, W. G. Kenton, A. G. Leakey, Colette D. G. Le Doux, A. Levin, C. B. Lewis, N. S. Lockyer, P. B. Longden, S. C. Lovell, J. Lynch, R. L. P. Lytle, R. W. J. Maclure, J. C. McConnachie, Hilary Macfarlane, A. C. Mackay, G. K. Marshall, J. G. Mathewson, J. E. M. Melville, J. McM. Mennell, P. A. Menon, W. H. H. Merivale, Edith S. M. Merry, B. U. Meyer, E. W. Miles, I. H. Miller, C. J. Milligan, E. Millington, Mary R. More, Margaret E. Morgans, A. Morgenstein, Margaretta D. Morrell, O. D. Morris, A. Murray, R. A. Murray, E. J. A. Needham, E. Neumark, J. Newsome, J. W. Nicholas, C. G. Nicholson, R. S. Nicholson, Doreen Nightingale, D. A. Osborn, W. J. O. Page, F. D. P. Palmer, P. J. E. B. Palmer, W. R. K. M. Parry, A. Ll. Patterson, J. W. Paulley, S. D. Perchard, Edith O. V. Perry, Lorna C. Petersen, E. E. Philipp, S. Pillai, P. B. Pillay, A. S. S. Playfair, M. R. Pollock, R. C. Ponder, S. H. M. Price, A. H. Pritchard, T. J. F. Pugh, J. D. Randall, T. H. Redfern, J. J. Reeks, J. C. A. Renshaw, T. V. H. Richards, A. G. Riddell, E. Ridehalgh, F. W. B. Rilstone, V. H. Roberts, G. A. Robinson, L. Rosen, H. A. Rowley, M. S. Rowley, R. S. Rowntree, R. J. Russell, J. C. Ryle, E. Schlesinger, G. B. Schofield, F. H. Scoones L. G. Scott, W. McC. Scott, C. J. P. Seccombe, P. G. Seed, M. P. Shapiro, A. E. A. Shaw, Margaret M. Shrubsall, K. W. C. Sinclair-Loutit, L. E. Smith, A. G. Spencer, P. N. Stanbury, G. B. Stanford, R. N. Stansfield, N. Stephen, A. V. Stevens, A. A. Stonehill, G. B. Stratton, J. D. Stride, P. R. Stringer, W. G. Sugden, J. H. Swan, L. A. Sylvester, Maggie Tan, P. Tettmar, A. C. Thackray, J. M. Thom, C. C. Thomas, G. L. E. Thomas, G. A. Thompson, Jean F. Thompson, J. F. Thompson, Phyllis M. Timothy, T. E. Tuley, P. M. Turquet, P. A Tyser, C. H. C. Upjohn, H. D. S. Vellacott, R. C. Vevaina, Margaret H. Vickery, Edith W. Wagstaff, B. E. Welton, G. C. C. Wharton, Merle Whitehead, W. R. D. Wiggins, D. R. C. Willcox, J. M. Willcox, Emily K. Williams, H. W. G. Williams, J. Ll. Williams, J. N. Williams, C. W. Wilson, R. C. Witt, S. Witt, E. Wolfendale, P. H. Woodcock, Alice Yates, J. A. Yates.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Reopening of the Museum

The general anatomical and pathological collections will be open for inspection as from Monday, November 6, at the following times: Mondays to Fridays, 10 a.m. to dusk; Saturdays, 10 a.m. to 1 p.m.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At the quarterly meeting of the Council, held in the College House, London, W., on October 28, with the President, Professor W. Fletcher Shaw, in the chair, Walter William Chipman, M.D., F.R.C.S.Ed., F.A.C.S., F.R.C.S.(Can.), LL.D., Emeritus Professor of Obstetrics and Gynaecology, McGill University, Canada, was admitted to the Honorary Fellowship of the College (*in absentia*).

M. Datnow, Liverpool, was admitted to the Fellowship (*in absentia*).

The following were admitted to the Membership (*in absentia*):

B. H. Anderson (Melbourne), A. W. Andison (Canada), G. W. Blomfield (Leeds), D. R. Cairns (London), W. D. A. Callam (Edinburgh), D. G. W. Clyne (London), Molly C. Devenish-Meares (Sydney), D. S. Greig (London), T. N. Hart (Bolton), W. Hawksworth (New Zealand), W. M. Lemmon (Melbourne), G. G. Lennon (Birmingham), F. H. Lord (Melbourne), R. Lyons (Canada), T. A. MacFarland (New Zealand), D. M. W. Maxwell (Windsor), S. Misra (Calcutta), D. V. Morris (Galway), R. I. Ritchie (New Zealand), T. F. Rose (Sydney), Everell M. Shippam (London), R. de Soldenhoff (Lyme Regis), G. B. Thomas (Lahore), S. L. Townsend (Melbourne), J. D. Watt (Romford), Ella Windeyer.

Grace Johnston Cuthbert, Sydney, was elected to the Membership.

Mr. J. P. Hedley assumed the office of honorary treasurer in place of Mr. Eardley Holland.

The examinations for the M.R.C.O.G. and the D.R.C.O.G. will continue to be held, and the activities of the College are being maintained.

The following have been awarded the Diploma of the College:

J. J. Carter (Co. Down), Penuel M. E. Chitty (London), S. Bender (Liverpool), J. V. Dhurandhar (Bombay), Phillis Dingle (Liverpool), K. W. Evans (Liverpool), W. W. Gilford (Reading), G. Gillies (Burton-on-Trent), W. Heng (Hong Kong), J. R. E. James (Carmarthen), J. E. Jameson (Moreton-in-Marsh), V. N. Khadilkar (Bombay), O. P. D. Lawson (Bellshill), S. Madden (Leeds), J. M. McKiddie (Aberdeen), K. S. E. MacRae (Liverpool), Mabel G. Miller (Manchester), Anne C. Robertson (Hull), I. Rose (Barnsley), K. C. Shah (Bombay), P. N. Simons (Sydney), I. E. J. Thomas (London), R. M. Williams (London), J. W. E. Webster (Aberdeen), L. A. C. Wood (Penshurst).

SOCIETY OF APOTHECARIES OF LONDON

Mastery of Midwifery Examination

In view of the present unsettled conditions the examination for the Mastery of Midwifery will not be held in November this year. The examination next May will be held as usual if circumstances permit. Regulations and forms of application for admission to the examination may be obtained from the Registrar, Society of Apothecaries of London, Water Lane, Queen Victoria Street, E.C.4.

The following candidates have passed in the subjects indicated:

SURGERY.—B. Berman, J. J. Brenner, W. R. Dyke, R. G. Feast, M. C. Fulton, E. F. Gleadow, M. C. Mair, S. T. Nakib, G. L. L. Reynolds, E. G. F. Skinner, D. Specter, J. A. Sutton.

MEDICINE.—W. R. Dyke, M. C. Fulton, G. Hannigan, S. Krishnan, J. Marks, T. Owen, T. I. Palmer, W. E. Roden, J. C. Scott, H. F. Sparling, E. A. Spouse, W. N. Vellacott, C. E. Winterstein.

FORENSIC MEDICINE.—W. R. Dyke, M. C. Fulton, G. Hannigan, J. Marks, T. Owen, W. E. Roden, J. C. Scott, H. F. Sparling, E. A. Spouse, W. N. Vellacott, C. E. Winterstein.

MIDWIFERY.—T. A. H. Adkins, M. E. Davies, W. R. Dyke, A. A. M. Easton, G. E. H. Enderby, M. C. Fulton, R. H. Gaman, P. Haden, A. Hannun. W. D. Jenkins, H. A. Kreiser, A. P. Motley, S. J. P. Ras.

The diploma of the Society has been granted to J. J. Brenner, M. E. Davies, W. R. Dyke, M. C. Fulton, W. D. Jenkins, S. Krishnan, M. C. Mair, A. P. Motley, S. T. Nakib, T. Owen, T. I. Palmer, G. L. L. Reynolds, W. E. Roden, H. F. Sparling, D. Specter, W. N. Vellacott, C. E. Winterstein.

The Services

HONORARY PHYSICIAN TO THE KING

The King has approved the appointment of Colonel G. G. Jolly, C.I.E., V.H.S., I.M.S., to be Honorary Physician to the King as from August 17, 1939, in succession to Brevet Colonel R. N. Chopra, C.I.E., I.M.S., who has retired.

HONORARY SURGEON TO THE KING

The King has approved the appointment of Colonel J. Taylor, C.I.E., D.S.O., V.H.S., I.M.S., to be Honorary Surgeon to the King as from August 30, 1939, in succession to Colonel Sir Alexander J. H. Russell, C.B.E., I.M.S., who has retired.

DEATHS IN THE SERVICES

Lieutenant-Colonel CHARLES WALTER HOLDEN, C.M.G., D.S.O., R.A.M.C. (ret.), who died at Sheffield, aged 60, was educated in the school of the Royal College of Surgeons in Ireland, and took the L.R.C.P. and S.I. in 1900, and subsequently the D.P.H. of the Irish Colleges and the D.T.M. and H. at Cambridge. After qualifying he filled the post of resident physician at the Whitworth Hospital, Dublin. He entered the R.A.M.C. as lieutenant on January 31, 1903, became major on September 1, 1914, and received a brevet lieutenant-colonelcy on June 3, 1918, retiring on May 15, 1926. He served as civil surgeon in South Africa from March, 1901, to February, 1902, taking part in operations in Cape Colony, and received the Queen's medal with three clasps; and in the war of 1914-18, when he was mentioned in dispatches. He was a member of the British Medical Association for twenty-seven years.

Obituary

SIR PATRICK HANDYSIDE

Surgeon Rear-Admiral Sir Patrick Brodie Handyside, K.B.E., C.B., whose distinguished service career was recorded briefly in our last issue at page 890, was born in 1860, a son of John Brodie Handyside of Fenton, Drem, who for many years, and also his father before him, farmed West Fenton. Educated at Edinburgh Academy, Patrick Handyside studied medicine at the University of Edinburgh, and after graduation was appointed assistant surgeon in the Royal Navy in 1884, shortly after his twenty-fourth birthday. In 1903 he was promoted fleet surgeon "for conspicuous professional merit," and his subsequent rapid advancement to the rank of Surgeon General was largely due to recognition of his sound professional knowledge and administrative ability. His inquiries into the health of the Japanese Navy and Army, both in Manchuria and Japan, earned him public appreciation from the British and Japanese Governments. Sir Patrick's oversea service included the North America and West Indies station, Cape of Good Hope, Esquimalt Hospital, and China. His service in this country was largely spent in appointments at the Royal Naval Hospitals at Plymouth and Chatham, and from the latter hospital he retired in 1920 with the rank of surgeon rear-admiral. His retirement to Gullane did not end the activities of a full and vigorous life; he was deeply concerned for the well-being of ex-service men and accepted office as honorary president of the Gullane Branch of the British Legion. He also interested himself in local politics and was a member of the East Lothian County Council. The funeral took place privately in Edinburgh.

JOHN ELLISON, F.R.C.S.Ed., F.R.C.O.G.

Surgeon, Chelsea Hospital for Women

We regret to announce the death on October 19 of Mr. John Ellison, the well-known gynaecologist, who was for many years a member of the visiting staff of the Chelsea Hospital for Women.

Born at Jullundur in 1886, he was educated at All Hallows School, Honiton, and Downing College, Cambridge, graduating B.A. in 1909 and taking the M.B. and B.Ch. degrees in 1912. His early appointments were those of house-surgeon, resident obstetric assistant and gynaecological registrar at St. George's Hospital, where he had won a university scholarship from Cambridge. Deciding to devote himself to diseases of women, he served as registrar at the Samaritan Free Hospital, at the General Lying-in Hospital, and at the Chelsea Hospital for Women, and after taking the F.R.C.S.Ed. in 1918 he was elected assistant gynaecological surgeon to the Grosvenor Hospital for Women, and surgeon to out-patients at Chelsea. Later he became consulting gynaecological surgeon to the Watford Peace Memorial Hospital, the Woodford Jubilee Hospital, the Chislehurst, Orpington, and Gray Valley Hospital, and the Bute Hospital, Luton; he was also consulting surgeon for puerperal fever to the Counties of Hertford and Bedford. He joined the British Medical Association in 1925 and was elected F.C.O.G. in 1934.

Mr. Victor Bonney writes: Will you allow me to pay a tribute to the memory of John Ellison, whose premature and sudden death has come as a great shock to his many friends. I was intimately associated with him at Chelsea Hospital for Women for a long period, during part of which I had the advantage of his assistance in the operating theatre. He combined a wide knowledge of the specialty he practised with sound judgment and sterling common sense. Naturally averse, I think, to anything that savoured of the spectacular, he yet as a surgeon was most fully equipped, and adorned with manipulative skill and unswerving conscientiousness an operative repertory which commanded every gynaecological procedure performed at the present day. His colleagues and all who knew him will long deplore his departure.

GEHEIMRAT DR. HANS HORST MEYER

Geh.Rat Hans Horst Meyer, whose death on October 6 is announced at the age of 86, was the chief direct inheritor and transmitter of tradition from a great era which, under Binz, Buchheim, Schmiedeberg, and Böhm, saw the foundation in Germany of pharmacology as an experimental science. Meyer was a pupil of Ludwig and of Schmiedeberg, and after a brief tenure of the Chair of Pharmacology in Dorpat, held those in Marburg and in Vienna for the main periods of his active career. His name will always be associated with the theory connecting anaesthetic activity with relative solubility in water and lipoid solvents, put forward at the same time and independently by E. Overton. Other well-known researches by Meyer dealt with the natural and artificial muscarines, and with local tetanus, the latter in association with the late F. Ransom. No list of Meyer's published researches, however, can do justice to his position and influence in pharmacology, which spread far beyond his own country. A man of distinguished and attractive personality, he made many contacts here and in America, as well as on the continent of Europe. The textbook of experimental pharmacology which he wrote with the late R. Gottlieb is a standard work kept up to date till recently with his pupil and successor, E. P. Pick, now in America. Another distinguished direct pupil of Meyer is O. Loewi, professor in Graz till 1938. At any international gathering of pharmacologists in recent years the thoughts of those present from all countries turned to Meyer, with the desire to send a message of affectionate respect to the venerable master of their science.

H. H. D.

Among the late Mr. ARTHUR THOMAS PITTS's dental appointments (writes "D. N.") there was none which gave him more pleasure and which was of greater service to the community than his long connexion with the Hospital for Sick Children, Great Ormond Street. Mr. Pitts's association with this hospital began more than thirty years ago as clinical assistant to Mr. Warwick James, who was then dental surgeon to the hospital. On Mr. James's resignation in February, 1914, Pitts was elected to succeed him, and he occupied the post for more than the usual fifteen years of active service to the hospital, for during the last war he served with great distinction during the years 1914–19. He was so interested in his work at Great Ormond Street that at the end of the normal period of service he applied to the Board of Management for an extension of the tenure of his post. This was willingly granted, and on his resignation in October, 1930, his long and valued services to the hospital were recognized by his appointment as consulting dental surgeon. Pitts was devoted to children and they to him, with the result that they willingly attended his clinics, realizing, as if by instinct, that all he did was for their benefit. Among the many aspects of dental surgery in which he was interested was the relation of oral manifestations to systemic disease in children, to the discussion of which he gave a stimulating opening address at a meeting of the Royal Society of Medicine in 1927. Congenital syphilis was among the diseases discussed, and in this disease he had long interested himself. He was a great admirer of Sir Jonathan Hutchinson and was well acquainted with all his writings on syphilis. In his dental clinics at Great Ormond Street Pitts was always on the look-out for teeth suggestive of congenital syphilis, and on many occasions his suspicions were confirmed by subsequent blood tests. It is to be hoped that his teaching on this branch of paediatrics, which is too little studied by dentists as well as doctors, will not have fallen on stony ground, and that it will be remembered and applied by his disciples and pupils. The present writer was greatly indebted to him for much valuable co-operation on a subject in which we were both interested. This help was always willingly given, and in his clear and incisive manner. His premature death is a great loss to the two professions of which he was a valued member. Our sympathy is extended to his widow, who was formerly a nurse at Great Ormond Street, and to his family.

Dr. HENRY A. ELLIS, who died at Crowborough on October 3 after a long illness, was born on July 24, 1861, the fourth son of Colonel Francis Ellis of Omagh, County Tyrone. He was educated at St. Columba's, County Tyrone, and privately at Stratford-on-Avon, and qualified at Trinity College, Dublin (M.B. 1884, B.Ch. 1885). In 1885 he went to Australia, and was a resident at Sydney Hospital for two years. From 1890 to 1894 he held the posts of honorary surgeon and physician to the hospital. For the next nine years he was medical officer of health for Western Australia and superintendent to the Government Sanatorium, Coolgardie. He played a prominent part in Australian politics during these years, sitting in Parliament from 1903 to 1906 and supporting energetically the successful movement for Federation. Returning to England in 1913, Dr. Ellis was tuberculosis officer in Middlesbrough throughout the war and a commandant of the Red Cross Society. In 1919 he came to London as assistant physician at the Margaret Street Hospital for Diseases of the Chest. He married in 1913 Emily K. Gordon Wylie, third daughter of the Rev. David Stewart Wylie of Adelaide, South Australia. Dr. Temple Grey writes: Ellis will be sorely missed in the comparatively small circle that was privileged to know him. Big in body and mind, he had an uncommonly commanding appearance. His wide experience and unconventional modes of thought with many whimsical expressions were less appreciated than they might have been except by his friends. His rare talents, little short of genius, were employed chiefly so far as medicine is concerned on the elucidation of constitutional types from a chemical point of view. His work owed its value less to his technical equipment than to his broad imagination and singular inventiveness. I have never seen or heard of such elaborate analyses of the urine as he used to make, including the estimation of the Mg, Ca, K, and Na almost as a routine. Every medical man should read his *Reaction and Disease* (Lewis), and as for his capillator for the determination of the *p*H, those who have not used it have much to learn about time-saving methods. A few of us formed with him in 1928 the Ringer Society, which used to meet on Sundays, but seven days' work a week proved too much for all of us except Ellis, and the society ceased to meet.

We regret to announce the death of Dr. JOHN KENNEDY, of High Road, Leyton, which took place at his home on October 24. Only ten days before Dr. Kennedy carried out his professional duties, although suffering with angina pectoris, from which malady he succumbed. Born in Coatbridge sixty-two years ago, he was educated at Glasgow University. After graduating M.B., Ch.B. in 1902 he held posts at the Glasgow Royal Infirmary as house-surgeon and house-physician, and subsequently was resident assistant physician at the Ruchill Fever Hospital, Glasgow. He came to Leyton thirty-two years ago and took over a large practice in the heart of the town. He had been a well-known and popular figure in the life of

Leyton for a whole generation. He was district medical officer for the Essex County Council, and emergency medical attendant to the Leyton Isolation Hospital. He was a member of the British Medical Association since 1911, a Freemason of the Coatbridge Lodge, and a member of the Chingford Golf Club. He leaves a widow and two sons, for whom much sympathy is felt, and is survived by his aged parents and sister, who live at Bothwell, and by his brother, Dr. Alexander Mills Kennedy, physician to the Cardiff Royal Infirmary. The funeral took place on October 27 at the City of London Cemetery.

Mr. Philip Northcott Vellacott, formerly of Bloemfontein, died on October 24, at Crowborough. A student of Guy's Hospital, he graduated M.B.Lond. with honours in obstetric medicine in 1895, took the English Conjoint diplomas in 1896, and the B.S. in 1897. For a time he was captain in the Orange River Colony Division of the South African Constabulary, and in 1901 obtained the F.R.C.S.Eng. In 1908 he contributed an article on hydatid disease to the *South African Medical Record*. Mr. Vellacott was vice-president of the Orange Free State Branch of the British Medical Association in 1914–15 and 1922 and president in 1924–5 and 1932–3. During the last war he held a commission as temporary Major R.A.M.C. in the British Expeditionary Force.

News has been received of the death at his home in Claremont, Capetown, of Mr. Arthur Ronald McLachlan, who was honorary surgeon to the Woodstock Hospital, Capetown, and additional honorary surgeon to the New Somerset Hospital, Capetown. After studying medicine at Guy's Hospital and taking the English Conjoint diplomas in 1899 he obtained the F.R.C.S.Eng. in 1901, and served as civil surgeon in the South African Field Force. Mr. McLachlan joined the British Medical Association in 1904 and was chairman of the Capetown Division in 1932.

The late Professor Santesson, who died from coronary thrombosis on July 26 in Sweden, held at one time the chair of pharmacology in Stockholm. Even after his retirement from this post he led an active life, and he published altogether more than 200 scientific studies. Some of them dealt with the pharmacology of digitalis and allied drugs.

The following well-known foreign medical men have died: Dr. Ralph Augustus McDonnell, formerly clinical professor of dermatology, Yale University School of Medicine; Dr. Axel E. Bisgaard, a Copenhagen psychiatrist, aged 64; Dr. Henri Blanc, former president of the Société des Chirurgiens de Paris; Dr. Hans Sauer, one of the pioneers of Kimberley, the Rand, and Rhodesia, and one of the first medical officers of health in South Africa, and author of an autobiographical work entitled *Ex Africa;* and Dr. Félix Legueu, emeritus professor of urology in the Paris faculty, aged 72.

Medical Notes in Parliament

This week the House of Commons completed its consideration of the Prices of Goods Bill. It also discussed a proposal to increase old age pensions, the problems of civil evacuation, and the effect of certain Defence Regulations on the liberty of the subject.

The Parliamentary Medical Committee met on October 26. Sir Francis Fremantle reported on consultations with Ministers about medical questions in the emergency.

Sir Ernest Graham-Little has invited members representing university constituencies to form a committee.

Emergency Medical Service

Sir Ernest Graham-Little inquired on October 25 what schemes of emergency medical service for the members of visiting staffs of voluntary hospitals in London were now official and open for acceptance by those members; and whether Dr. Elliot would take measures to encourage the return of visiting staffs to London, and the opening of the beds in hospitals for civilian cases, with a view to restoring some adequate instruction for medical students for whose education the London teaching hospitals were chiefly responsible. Dr. Elliot, in reply, stated that after the enrolment of whole-time officers in the Emergency Medical Service two modifications were introduced—one enabling these officers to go on indefinite leave without pay until the occurrence of casualties made it necessary to recall them to duty, and the other, which was recommended by a committee of representative consultants, enabling these officers to transfer from whole-time to part-time service. The second offer was made by letter to individual whole-time officers in the Emergency Medical Service, and officers proposing to accept the offer were asked to do so within a week. He was, however, willing for the present to continue to keep the offer open to those officers who had not yet replied. He was also in consultation with the Presidents of the Royal Colleges of Physicians, of Surgeons, and of Obstetricians and Gynaecologists, and others on a number of points arising out of experience of war conditions so far. He understood that he might receive shortly further proposals from a representative committee of the profession now sitting, which he would consider in connexion with the points raised by Sir Ernest. Dr. Elliot added that he would have no objection to a further arrangement under which certain senior men of the standing of Fellows of the Royal College of Physicians not already in the Service who were willing to give a substantial proportion of their time if a major emergency arose but were desirous, in present circumstances, of remaining without obligation and without remuneration, would so inform him. It had been made clear to hospitals by broadcast announcements and otherwise that civilians requiring in-patient treatment should be admitted. He had at all times been anxious, in consultation with the profession, to adopt such measures for making the necessary medical staff available as were consistent with due provision for the treatment of air raid casualties.

Mr. Spens asked Dr. Elliot on October 26 to what extent he found it possible to consult the medical profession in determining the terms and conditions of employment of medical practitioners in the Emergency Medical Service. Dr. Elliot replied that consultations with representatives of the medical profession had taken place at frequent intervals. In 1937 the Central Emergency Committee of the British Medical Association was asked to compile a register of practitioners with a view to ascertaining their availability and special qualifications for service in an emergency. This register comprised about 98 per cent. of the profession. The utmost use was made of this committee (now called the Central Medical War Committee), working through local committees which were representative of the profession as a whole. The grading and basis of organization of the Emergency Medical Service followed the recommendations of the Central Medical War Committee and the Group Officers, who were eminent consultants. In July, 1939, invitations to enrol for whole-time service were sent to practitioners who were nominated by the Group Officers. Arrangements were subsequently made under which these full-time officers could go on indefinite leave without pay, subject to recall when occasion arose. Later, the option to transfer from full-time to part-time service was given under conditions recommended by a committee constituted from among leaders of the profession and presided over by Sir Bernard Docker. The constitution of this committee and the conditions it recommended were given in reply to Sir Ralph Glyn on October 12. On October 18 a committee consisting of the Presidents of the Royal Colleges of Physicians, of Surgeons, and of Obstetricians and Gynaecologists, and representatives of the Group Officers, of the Central Medical War Committee, and of the London County Council was set up to consider whether present circumstances necessitated further measures of reorganization. This committee had not yet reported.

Dr. Elliot circulated details of the personnel of the Central Emergency Committee (Central Medical War Committee), the Group Officers, and the special committee appointed on October 18, and these are published in the *Supplement* this week at page 216.

inoculated against small-pox. Dr. Elliot said in reply on October 25 that the consideration whether a child had or had not been vaccinated was not at present one which the local authority was required to consider in arranging billets for evacuated children. In present circumstances the risk involved need not be taken into account.

Mr. Viant asked on October 26 if Dr. Elliot's attention had been directed to a statement made by the medical officer of health to the Launceston Town Council that he had been advised by the Minister of Health that the consent of the teacher in charge of evacuated children to his proposal to inoculate them against diphtheria would be sufficient. Dr. Elliot said his attention had not been drawn to this statement, and he could not understand how it could have been made. It would be quite contrary to the policy and instructions of his Department for evacuated children to be immunized against diphtheria without the previous consent of their parents.

Local Authorities and Treatment of War Casualties.—Dr. Elliot announced on October 19 that he had informed local authorities and other similar bodies that the reasonable cost of treating and maintaining casualties in hospitals and generally any additional expenditure due to the participation of hospital authorities in the Emergency Hospital Scheme would be met by the Exchequer. He had forwarded to the representative associations of the local authorities concerned certain proposals as a basis upon which interim payments from the Exchequer should be made. He hoped to announce the arrangements at an early date.

Vaccination and Inoculation in the Army.—On October 24 Mr. Hore-Belisha told Mr. Leach that definite instructions had been issued to all army commands to the effect that inoculation and vaccination were on a purely voluntary basis.

Sir Victor Warrender stated on October 19 that soldiers were required to rest for forty-eight hours after anti-typhoid inoculation. Only exceptionally had this period of rest to be extended. Sick leave was unnecessary. Untoward effects were unusual and, if they occurred, were transient.

Unsuitable Children's Camps in Suffolk.—Mr. Sorensen drew attention on October 26 to complaints concerning cold, lack of light, inadequate air raid precautions, and general unsuitability of conditions affecting defective children evacuated from Leyton and elsewhere to Suffolk coast camps. Mr. Kenneth Lindsay replied that the camps in question were inspected early in the summer by representatives of the evacuation authority for London, and appeared to be the most suitable accommodation which could be found for handicapped children. After expert inspection a number of these camps had not been found suitable for continued use by such children in winter conditions, and five had been vacated. It would probably be necessary to vacate two further camps.

Alien Medical Graduations at Edinburgh.—Sir John Anderson announced on October 26 that he would have inquiries made and collect particulars of the cases of the sixteen graduates of foreign universities who had recently been admitted licentiates of the Royal College of Physicians of Edinburgh. He had not obtained information to show whether it was intended to allow them to practise medicine or surgery in Great Britain or in other parts of the British Empire.

Death Rates.—Mr. Colville, replying to Mr. R. Gibson on October 31, said that except in the case of the largest towns, wide variations in the weekly death rates of individual towns were a normal experience. If the death rates in Greenock and Hamilton were examined over the first six months of this year it would be found that, although there were marked differences in the weekly rates between the one town and the other, the aggregate death rates over that period for each town and for the large burghs of Scotland as a whole were practically the same.

Cheap Milk Scheme.—Seventy-eight welfare authorities have submitted proposals for the supply of cheap milk for mothers and young children, 122 have stated that the matter is under consideration, 171 have not yet replied, and thirty-six have deferred consideration.

Notes in Brief

The distribution of anti-gas protective devices for young children is under review. Where additional quantities are required to meet the needs of evacuated children who have returned home these will be supplied.

Mr. Chamberlain hopes next week to be able to make a statement with regard to the further consideration of the Criminal Justice Bill in the House of Commons.

The standard margarine will contain additions of vitamins A and D, estimated to bring it up to the vitamin value of butter.

Allocation of raw materials for the glucose industry is under consideration, and the Government is aware of the demand for pure glucose for medicinal purposes and for the manufacture of infant foods.

Medical News

The Delhi correspondent of the *Times* states that H.H. the Maharaja of Gondal has sent the Viceroy of India a cheque for 100,000 rupees (£7,500), requesting that this sum be distributed among the dependants of the men who lost their lives through the sinking of the *Royal Oak*. The Maharaja is an M.D. and F.R.C.P. of Edinburgh, having graduated in medicine in 1892, and a Fellow of the College of Physicians and Surgeons of Bombay. He has received the high honours of G.C.S.I. and G.C.I.E. from the King-Emperor, and the LL.D. and D.C.L. from the Universities of Edinburgh and Oxford.

The B.B.C. announces that talks on health matters will be broadcast as follows: November 9, 4.15 p.m., "Talking it Over: Your Health," by a Harley Street physician; November 10, 9.45 a.m., and November 17, 10 a.m., "Family Life," by a medical psychologist.

By reason of the war it has been decided to shorten the course for the Cambridge Diploma in Medical Radiology and Electrology from nine to six months, and to hold examinations for Part I in December and April next, and Part II in April and July. Details will be found under "Universities and Colleges."

Owing to the war it has been decided by the council to suspend all activities of the Chelsea Clinical Society.

The King has approved the award of a silver clasp inscribed "Antarctic 1935–37" to Surgeon Commander Edward William Bingham, R.N., a member of the British Graham Land Expedition, 1935–7.

Manchester Royal Infirmary received permission on October 30 from the Ministry of Health to reopen the twenty-eight beds at the central branch in Roby Street and the 134 beds at Barnes Convalescent Hospital, Cheadle, where a new operating theatre has been installed.

At a recent meeting of representatives of the Leeds City Council, the West Riding Council, and the hospitals of Leeds, held at the General Infirmary, it was decided to increase substantially the number of beds available for civilian sick in some of the hospitals of the Leeds group. The Health Committee of the Leeds Corporation had previously decided to release for civilian sick about a hundred beds out of the eight or nine hundred for war casualties.

National Rat Week begins this year on November 6. A leaflet "The Destruction of Rats and Mice" is issued free on application to the Ministry of Agriculture.

On October 31 Mr. GROVES asked the Minister of Health if he was aware that many medical men appointed to the emergency medical services had been dismissed, and that those in Class G would receive, by way of compensation for such dismissal, a payment equal to salary at the rate of £350; and if he would state by whom such appointments were made. Dr. ELLIOT said that no medical men appointed to the Emergency Medical Service controlled by him had been dismissed, and no question of compensation therefore arose. Class G consisted of resident house officers who were appointed for three months or longer at £350 a year, this being the scale of salary recommended by the Central Medical War Committee on behalf of the profession.

Heavy Vehicles as Ambulances

On October 31 Mr. WOODBURN asked the Minister of Health whether he was aware of the apprehension in the medical profession about the present practice of adapting heavy motor vehicles as ambulances for the conveyance of war-time casualties; that a number of medical officers of health and air raid precautions authorities had condemned these vehicles as unsuitable for the purpose intended, that the cost of compensation and the cost of adaptation of these heavy vehicles was greater than the capital cost involved in the purchase of new trailer ambulances; and whether he would give instructions to permit trailer ambulances to supplant unsuitable motor vehicles and relieve these for the needs of road transport. Miss HORSBRUGH said she was aware that some of the vehicles on which local authorities had had to rely for ambulances at the outset of the emergency required to be replaced by more suitable vehicles. It was desirable, on grounds of economy, to eliminate so far as possible the cost of hiring commercial vehicles for the ambulance service, and the Minister had recently authorized local authorities to purchase vehicles, but not necessarily trailers, in substitution for hired vehicles.

Panel Doctor's Payments

On October 24 Mr. GROVES asked the Minister of Health when and why the departmental circular was sent to insurance committees suggesting that only two-thirds of the sums due to insurance practitioners for last quarter should be distributed. Dr. ELLIOT replied that the circular was sent out on September 13. At the outbreak of war the departure of insurance practitioners on war service was in some cases not notified by them to insurance committees for a considerable time. The circular therefore recommended that where the position was not clear insurance committees should make payments on account representing the first two months only of the quarter, the balance being paid at the end of the present quarter or at such earlier date as might be convenient.

Recruitment of Doctors

Mr. GROVES asserted on October 25 that there was a feeling among members of the medical profession of victimization in connexion with the selection of personnel for the examination of recruits. He asked Mr. Ernest Brown whether he would collaborate with all associations of doctors to ensure equity. Mr. ERNEST BROWN replied that he was not aware of any ground for the alleged feeling of dissatisfaction among members of the profession.

Mr. GROVES inquired on October 26 whether Dr. Elliot had approached the Union of Medical Practitioners in respect of the supply of medical men for the forces and for the examination of recruits; and whether he would accept the services of this organization, which was available for co-operation with the Government. Dr. ELLIOT said in reply that the register of medical men available for the duties indicated was kept by the Central Medical War Committee, which, with its local committees, was widely representative of the profession. While, therefore, he appreciated the desire of the Union to co-operate, he could not usefully avail himself of its services for the two purposes suggested.

Answering supplementary questions by Mr. Groves, Dr. ELLIOT said he had always done his best to co-operate with the trade union movement, but this was a case of different organizations, and there was difficulty in negotiating with both. The Central Medical Register collected the names of 98 per cent. of the profession, and in any organization that would be regarded as a good register.

Measles: Precautionary Measures in Reception Areas

Mr. ISAACS asked the Minister of Health on October 25 whether any steps had been taken in the reception areas to deal with the anticipated measles epidemic which, over some period past, has occurred regularly every two years. Dr. ELLIOT replied that he had drawn the attention of local authorities to the need for additional hospital accommodation in reception areas for cases of infectious diseases both notifiable and non-notifiable. He was also issuing regulations providing for the compulsory notification of measles and instructing medical officers of health to make such inquiries and take such steps as were necessary or desirable for investigating the source of infection, for preventing the spread of infection, and for removing conditions favourable to infection.

Effect of Aircraft Engine Noise

Sir FRANCIS FREMANTLE asked on October 25 what action Sir Kingsley Wood had taken to reduce deafness from engine noise in the aviators and mechanics of his Department, and to ascertain and train the deafened for further service; and whether he would obtain the co-operation of the National Institute for the Deaf in the matter. Sir KINGSLEY WOOD replied that devices to lessen the effect of aircraft noise were provided for all flying personnel. Research into the question continued. Nerve deafness due to engine noise affected the hearing to a minor degree only and, as cases were detected at an early stage, did not ordinarily result in incapacitation. All flying personnel were examined periodically to assess the condition of their special sense organs, including the ears.

Doctors at First-aid Posts

Mr. GROVES asked if Dr. Elliot knew of the growing discontent of doctors in relation to the unsatisfactory arrangements made in connexion with first-aid posts by reason of their frequent attendance for the purpose of ensuring efficiency should an emergency arise, and of the fact that they did not know whether they were to be remunerated or were expected to do such work voluntarily. Dr. ELLIOT on October 25 replied that he recently discussed with representative doctors attached to first-aid posts the arrangements already made for training the personnel attached to the posts and the remuneration to which they were entitled under those arrangements. He recognized that some revision of the plan might be required owing to the course which the war had taken up to the present. He was considering the representations made in the light of reports which he had asked his officers to make on the situation in various parts of the country.

Mr. WOODBURN asked on October 26 why doctors attached to first-aid posts were not supplied with service gas-masks, steel helmets, and protective clothing; and if Dr. Elliot would have this deficiency remedied forthwith. Dr. ELLIOT said arrangements had been made to supply doctors attached to all first-aid posts with civilian duty respirators. An issue of light protective clothing had been made to every post. As regards steel helmets, arrangements had been made to supply them to doctors attached to mobile first-aid posts. Those arrangements were being extended to other first-aid posts. It was not considered necessary to supply general service respirators for this type of work. In a further question Mr. Woodburn challenged Dr. Elliot's statement that there was an issue of proper protective clothing to all posts, and said that many doctors had been sent civilian gas-masks.

Evacuated Children: Small-pox and Diphtheria Prophylaxis

Sir GIFFORD FOX asked whether householders on whom evacuated children were billeted and who themselves had children were compelled to accept evacuees who had not been

A cable has recently been received in London from Monte Video quoting a declaration by the Medical Syndicate of Uruguay, which states that in view of the events taking place in Europe the Syndicate wishes once more to record its repudiation of wars of conquest, and expresses its spiritual solidarity with the democratic countries which resist the use of force as a means of subjugating weaker nations.

The issue of the *Schweizerische Medizinische Wochenschrift* for October 7 is devoted to experiments on living animals, and contains articles by such well-known authorities as A. von Muralt and H. Hediger of Berne, W. R. Hess, Hans Fischer, H. Mooser, W. Free, and H. Binswangen of Zurich, Etienne Burnet of Tunis, R. Dujarric de la Rivière of Paris, Paul Uhlenhuth of Freiburg i. B., H. Roch of Geneva, Rudolf Staehelin of Basle, followed by an account of the anti-vivisection movement in England.

According to *Minerva Medica* of September 1, the only female surgeon in Germany is Frl. Caterina Freyberg of the Olga Hospital of Düsseldorf. She was the first medical student in Germany, and carried out her studies at Bonn. During the last war she directed a field hospital at Charleroi and a military hospital at Lenz. Since then other German women have qualified in medicine, but she remains the only surgeon.

According to *Policlinico* (Sez. Prat.), October 16, every soldier in Germany has his blood group noted in his identification book.

The issue of *Paris Médical* for October 7–14, which is devoted to neurology, contains articles by A. Baudoin and H. Schaeffer on neurology in 1939, the diagnosis of infantile paralysis by L. Babonneix, and the retrogression of infantile encephalitis by A. Tournay; and an obituary notice of Professor Marcel Labbé.

Professor H. C. Souja-Aranjo, member of the Brazilian Academy of Medicine and vice-president of the International Leprosy Commission, has founded two prizes at the Academy, each of the value of 2,000 dollars—namely, the Kadrowsky prize for the best work on the bacteriology of leprosy, and the Lieras Acosta prize for the best work on the immunology of leprosy.

A revised list (No. 7) has been issued by the Ministry of Health of treatment centres approved by the Minister under the Public Health (Venereal Diseases) Regulations, 1916, with particulars as to the days and hours for medical examination and treatment, and for intermediate treatment by or under the supervision of nurses or male attendants. A list of hostels and other institutions for women which accept in-patients under the approved schemes of local authorities for the treatment of venereal diseases is appended to the document.

Sir William Bragg, President of the Royal Society, has issued an appeal for funds for the Anglo-French Ambulance Corps, of whose general committee he is chairman. The personnel of the ambulance would be recruited from British residents in France. The honorary secretary's address is 42, Ennismore Gardens, London, S.W.7.

Dr. Robert Doerr, professor of hygiene at the Basle faculty of medicine, has been made a doctor *honoris causa* in natural science in his university in recognition of his work on ultra-virus diseases, especially psittacosis, and the relations between herpetic virus and encephalitis.

According to *Policlinico,* the mortality in the large cities of Germany from senile diseases such as cancer, diabetes, apoplexy, heart disease, and senile decay has recently shown an increase. As regards the infectious diseases of children, there has been a considerable increase in the first quarter of 1939 in the mortality of measles, scarlet fever, and whooping-cough, while that of diphtheria has fallen.

The following Italian professors have retired on reaching the age limit: Roberto Alessandri of Rome (surgery), Filippo Botazzi of Naples (physiology), Arturo Donaggio of Bologna (nervous and mental diseases), Ersilio Ferroni of Florence (obstetrics), and Ferdinand Levine of Milan (human anatomy).

Sofia University, which celebrates its fiftieth anniversary this year, has had a faculty of medicine only since 1918. At present there are 2,900 medical practitioners in Bulgaria, the ratio to the population being 1:2,000, compared with 1:5,090 in 1924. There is a plethora of doctors in the larger cities, while in the villages there is a scarcity.

The Dutch Medical Association has issued a request that all doctors in Holland should make the smallest use possible of motor fuel, and should use their motor cars only for their practice.

It has been decided that during the war no civilian doctor in Germany may change his residence without the permission of the Medical Board.

Since 1937 the following eminent Viennese doctors have been commemorated on postage stamps: Gerhard van Swieten (1700–1772), Leopold von Auenbrugger (1772–1809), Karl von Rokitansky (1804–1878), Joseph Skoda (1805–1887), Ferdinand von Hebra (1816–1887), Joseph Hyrtl (1810–1894), Theodor Billroth (1829–1894), and Theodor Meynert (1833–1892).

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

In England and Wales scarlet fever and pneumonia (influenzal and primary) have risen during the week by some 14 per cent. and 48 per cent. respectively. There is no reason to suppose that the observed increases are more than should be expected on the approach of winter; actually, notifications for Great Britain and Eire, with the exception of Northern Ireland, are below the figures for last year. Pneumonia, on the other hand, is rather more prevalent than last year; in view of the lower incidence of primary pneumonia in Scotland and the smaller number of deaths from this disease in England and Wales, it is probable that influenza or febrile catarrhs complicated by bronchopneumonia are mainly responsible. Clinical reports suggest that colds and catarrhs rather than influenza are the prevalent infections at present.

Compared with last year, notifications of diphtheria have slumped considerably in all the countries except Northern Ireland. In London, as in other large cities, epidemic diseases, especially those in which attack falls principally on children, represent only a fraction of last year's levels. Enteric fever, which attacks adolescents and adults chiefly, shows a slight increase over last week and a decided increase over last year. Four counties accounted for more than half the total for England and Wales—namely, Chester, 10 (Birkenhead 5, Wallasey 2, Bebington urban, Stockport, and Wilmslow urban 1 each); Suffolk, East, 5 (Lowestoft 1, Deben rural 4); Yorks, West Riding, 4 (Rothwell urban 2, Harrogate and Leeds 1 each); Middlesex 3, all in Harrow.

Scarlet Fever in 1939

In the last decade there has been a decline in the incidence of scarlet fever in England and Wales, Holland, France, and Hungary since 1934, in the United States of America since 1935, and in Ireland, Finland, Germany, and Rumania since 1936. In the first six months of 1939 a decline compared with 1938 has been observed in England and Wales, Belgium, Holland, Switzerland, Poland, and Yugoslavia, but increases have been reported in Sweden, Germany, Rumania, and Bulgaria. In the United States scarlet fever was lower during the four weeks ended August 12, 1939, than the median level for the thirteen-year period 1926–38.

Measles in U.S.A.

The year 1938 witnessed the worst measles epidemic in recent times. The number of cases reported was more than two and a half times that of 1937 and twice the average of that of the preceding five years. Deaths from measles were three times that of 1936 and 1937. The epidemic was widespread over the whole continent with the exception of the New England and Pacific Coasts, which remained fairly free.

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INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended October 14, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	23	—	5	2	—	18	4	2	—	—
Deaths		—	1				2	1		
Diphtheria	941	33	204	45	37	1,288	138	222	51	35
Deaths	20	—	5	1	1	27	5	5	2	—
Dysentery	33	4	89	1	—	49	13	14		—
Deaths			4	—	—			—	—	—
Encephalitis lethargica, acute	7	—	—		—	4	—	1		—
Deaths		—	—				—	—		
Enteric (typhoid and paratyphoid) fever	42	2	1	7	4	32	11	3	15	3
Deaths	3	—	—	—	—	3	1	1	—	—
Erysipelas			54	15	6			63	8	3
Deaths		—	—				1	2		
Infective enteritis or diarrhoea under 2 years										
Deaths	29	6	22	4	4	54	14	18	11	1
Measles			6		15		26	8		1
Deaths	2	—	—	—	—	—	—	—	—	—
Ophthalmia neonatorum	88	10	16		1	96	15	32		—
Deaths										
Pneumonia, influenzal*	519	46	10	2	2	483	38	3	1	7
Deaths (from influenza)	20	2	3	1	1	12	2	1	—	1
Pneumonia, primary			133	12				161	5	
Deaths		7		7	6		9		10	6
Polio-encephalitis, acute	—	—				8	1			
Deaths		—					—			
Poliomyelitis, acute	31	1	—	1	1	77	4	6	—	—
Deaths		—	—				1	—		
Puerperal fever	3	3	6	—	1	5	5	11	1	—
Deaths		1†					—			
Puerperal pyrexia	176	14	27		1	156	10	16		—
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,448	54	230	66	112	1,942	186	355	68	80
Deaths	—	—	—	—	—	1	—	1	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough			12		1		70	91		13‡
Deaths	2	—	1	—	—	3	—	—	—	—
Deaths (0-1 year)	258	27	65	19	17	282	43	66	32	10
Infant mortality rate (per 1,000 live births)						47	35			
Deaths (excluding stillbirths)	4,439	691	644	157	141	4,196	745	623	172	119
Annual death rate (per 1,000 persons living)			13.0	10.6	12.4	10.3	9.5	12.7	11.6	10.5
Live births	5,311	666	862	356	217	6,460	1,237	892	357	247
Annual rate per 1,000 persons living			17.4	23.9	19.1	15.9	15.8	18.2	24.2	21.9
Stillbirths	244	18	25			286	48			
Rate per 1,000 total births (including stillborn)			28			42	37			

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Death from puerperal sepsis.

‡ All in Belfast.

Medico-Legal

INSANITY AND DESERTION

Mr. Justice Langton decided on October 11 in Rushbrook *v.* Rushbrook[1] that a petition for divorce based on desertion cannot succeed if the respondent has been certified insane during the three years immediately before it is filed. The Matrimonial Causes Act, 1937, makes desertion continuously for three years before the petition a ground for divorce, but in addition to separation the respondent must also have what is called the *animus deserendi*—the intention to desert. If the respondent loses volition even for a single day he loses this *animus* and the period of desertion is interrupted. Mrs. Rushbrook was described as a case of dementia praecox, but the husband brought evidence that she had been at all times able to exercise a rational judgment upon the question of her relations with her husband. He asked the court to infer that she had a continuing *animus deserendi.* The learned judge, however, pointed to the judgment of the Master of the Rolls in Williams *v.* Williams,[2] from which he understood that it is not possible to make any inferences at all concerning the intention of a certified lunatic. This woman was under certificate for at least one year of the period necessary for the success of the petition, and the presumption that she had then no *animus* could not be rebutted by medical or other evidence.

A LEGAL ANOMALY

What a confusing state of the law! If a certified patient on leave from a mental hospital is sued for assault, negligence, or trespass, the certificate is not a final answer to the allegation; his mental condition is a matter of fact to be established by evidence. If a patient under certificate in a mental hospital attacks another patient and kills him he is put on trial, and may be found by a jury fit to plead; the relevant fact is his actual mental condition, not the existence of the certificate. A lunatic under certificate can during a lucid interval make a valid will. Why should there, in the Divorce Court alone, be an irrebuttable presumption that he is irresponsible? Every psychiatrist knows that many patients under certificate are perfectly capable of forming or maintaining an intention with reference to their marriages. Even if this were not so it is unfair that when a spouse has been a wilful deserter for a substantial period his insanity should count, against the other spouse, as a change of mind. This position must cause unjust and unnecessary hardship in many cases.

NEGLIGENCE OF A DENTAL CORPORATION

In December, 1937,[3] a lady visited the premises of the Co-operative Dental Association, Ltd., of Balloon Street, Manchester, to have an aching tooth extracted. She was advised to have all her teeth removed, and this was done. The anaesthetist then advised the dentist to tell her friends that she should be taken home as soon as possible and given medical attention. She died from pulmonary tuberculosis, although at the time of the extraction no one had any idea that she was already tuberculous. Her death was not connected with the extraction. When the association claimed their fees from her husband he refused to pay, and alleged that the dentist had been negligent in proceeding to complete the extraction in view of the patient's symptoms. The association sued the husband in the county court, but the learned judge found that the dentist had been negligent, and that the negligence of the association had continued in providing dentures at a time when the patient's mouth had been quite unfit to receive them. He therefore gave judgment for the husband with costs.

Letters, Notes, and Answers

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QUERIES AND ANSWERS

Income Tax

Naval Service—Lump-sum Gratuity

"S. P." is serving as a temporary surgeon lieutenant R.N., and is due to complete his five-year short service commission next February. If he then leaves the service the £1,000 gratuity payable will be untaxed. Will he have to pay tax thereon if he remains in the Service?

⁂ The decisions in the leading cases of lump-sum payments—Cowan *v.* Seymour and Hunter *v.* Dewhurst—lay stress on the fact that non-liability arose from the cessation of the employment. It would seem to follow that in the continuance of the employment there would not be grounds legally to remove the gratuity from the general liability that attaches to payments received for services rendered. At the same time it would clearly be inequitable for the Government to levy a tax otherwise not due because an officer had remained at his post in time of war. We suggest that our correspondent should communicate with the Admiralty Income Tax Assessor (or the Board of Inland Revenue at Somerset House), putting the facts before them and asking for their special consideration. We should be interested to learn the result. Failing other means, would it be possible to allow the present commission to lapse at the end of the five years, and rejoin a few days later?

LETTERS, NOTES, ETC.

Booklets on First Aid

The Boys' Brigade Ambulance Handbook and Manual of First Aid, by Dr. R. Leslie Ridge, and published by authority of the Brigade Executive, is a well-illustrated and compact volume of 199 pages (6d.). It deals with the usual matters included in first-aid books, and the use of thick type makes reference easy—an important point. The photographs illustrating the various types of bandage are particularly good. The clearly written section on fractured spine is accompanied by an *x*-ray picture of fracture of the cervical spine, but this particular fracture is not dealt with in the text, an omission which might be remedied in the next edition, as the mode of transport of such a case differs from that of a case of fracture of the lumbar vertebrae. The book is written in clear and unambiguous English, and should be of value to all concerned in the teaching of first aid. For those attending first-aid lectures Dr. E. S. Brawn has compiled his *Questions and Model Answers on First Aid* (George Gill and Sons; 6d.). Another help to the first-aider is *The Lecture Pocket Book* by Dr. Kenneth Black (George Gill and Sons; 1s.)—this consists of four useful coloured plates illustrating the anatomy of the body and of hints on treatment of haemorrhage and fractures.

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[1] 1939 4 All E.R. 73.

[2] 1939 3 All E.R. 825; *British Medical Journal,* 1939, 2, 590.

[3] *Manchester Guardian,* October 19.

BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 11 1939

THE ANATOMICAL AND PHYSIOLOGICAL BASIS OF PHYSICAL TRAINING[*]

BY

H. A. HARRIS, M.D., D.Sc.

Professor of Anatomy, Cambridge University

In view of the recent interest shown by the State in problems of physical education it may be profitable to consider certain anatomical and physiological facts which so far have not been given the prominence and forethought they demand. I propose to consider certain anatomical features and growth changes in the spine, the upper limb girdle, and the lower limb girdle, together with certain physiological principles in relation to posture. Agility, strength, and dexterity are useful servants but dangerous masters. Any collection of skeletons in a museum shows a high percentage of aged females and a higher percentage of adventurous inquisitive young males.

The Spine

As Ward (1876) said: "The vertebral column is a remarkable piece of mechanism. Strong enough to support several hundredweight, yet pliant and elastic: furnished with levers and muscles, by which it is bent in every direction, yet lodging an organ susceptible to injury from the slightest pressure: formed, for lightness, of a loose and reticular tissue, yet capable of sustaining, without fracture, shocks, strains, and contortions of considerable violence: this column certainly combines the most opposite qualities, and performs functions apparently incompatible."

In the infant each vertebra consists of three bony parts, a centrum and two lateral masses, separated by the neurocentral articulation, which consists of a plate of cartilage faced on both sides by a thin layer of calcified cartilage (Harris, 1933). The presence of three tissues so different in physical properties as bone, cartilage, and the intervening calcified cartilage is in itself a source of mechanical weakness in each vertebra. Active growth in size of the vertebra takes place at the neurocentral articulation (Fig. 1). The cartilage plates grow in thickness, cartilage is calcified and replaced by bone: the three constituent parts of the vertebra are carried further apart. The cartilage plates are true epiphysial plates, and are therefore subject to all those injuries and diseases which take place in the fast-growing epiphysial plates of the long bones. Bony union of the centrum and lateral masses to form the definitive vertebra by calcification and ossification of the neurocentral articulation is completed by 6 years of age.

In later childhood the spine consists of individual bony vertebrae, covered above and below by cartilage plates, and separated from one another by intervening fibrocartilages. At puberty certain changes take place. Annular epiphyses of bone appear in the cartilage plates above and below each vertebra, so that the vertebra now consists of bone, epiphysial bone, epiphysial cartilage, and calcified cartilage (Figs. 2 and 3). This increase in the heterogeneity of the tissue elements in the spine accounts for its special susceptibility to deformity and disease in puberty and adolescence. Kyphosis, lordosis, and, in particular, scoliosis appear. The vertebra with its superior and inferior epiphysial bony annuli is not consolidated by cessation of growth, calcification, and ossification of the epiphysial cartilages and final union of the annular epiphyses until about 23 to 24 years, when all growth has ceased in the long bones.

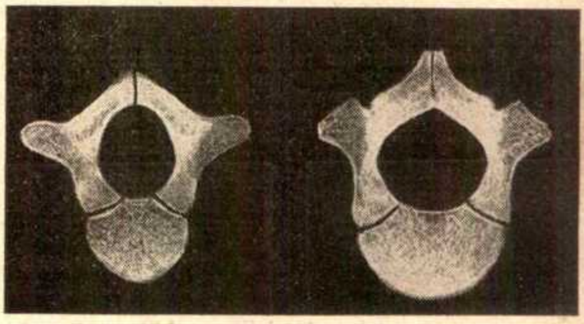

FIG. 1.—Radiograph of typical thoracic and lumbar vertebrae in the lamb to show the cartilaginous neurocentral articulation between the centrum and the right and left lateral masses. The spinal canal is larger than in the adult sheep.

The growth in length of the spine as a whole is most rapid in the first two years of life, when it increases from eight inches to sixteen and a half inches. Growth is then fairly regular and does not show the spurts which are registered so frequently in the lower limb. The adult spine in the male approximates closely to twenty-eight and a half inches and in the female to twenty-four and a half inches. Growth in the spine is not truly proportional, but takes place at varying rates in different parts, particularly during the first seven years of life. Roughly speaking, at birth the cervical, lumbar, and sacral parts of the spine each contribute one-fifth of the total length, the dorsal or thoracic region occupying two-fifths. From birth to adult life the spine increases in length by three and a half times, but whereas the cervical region increases threefold the lumbar region increases fourfold, so that the greatest growth is in this region and is associated with the great growth in the lower limb—the skin, musculature, and joints of which are largely supplied by lumbar nerves.

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[*] Read in opening a discussion in the Section of Anatomy and Anthropology at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

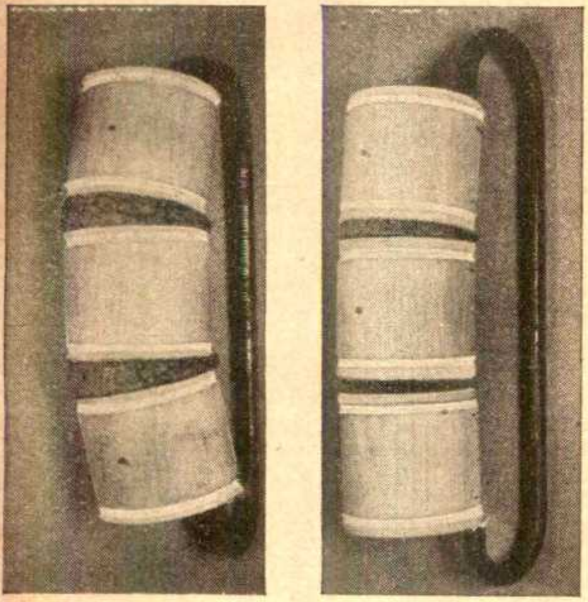
Man Sheep

FIG. 2.—Model of the lumbar vertebrae in man and sheep in the position of extension to show the relative proportions of the fibrocartilaginous disks, the vertebrae, and the bony epiphysial annuli or plates which lie above and below each vertebra with an intervening plaque of growth cartilage.

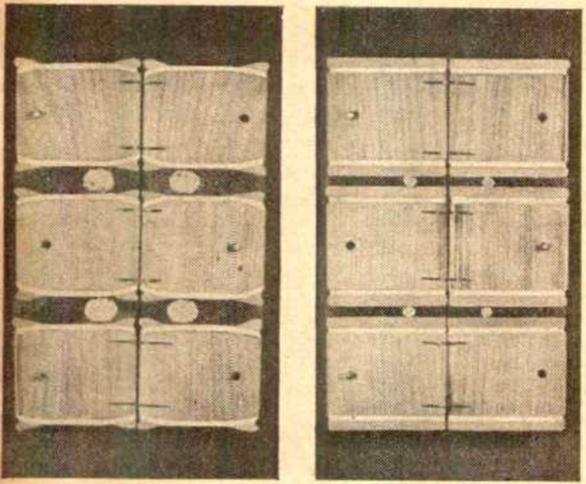
Man Sheep

FIG. 3.—The same models in section to show the increased thickness of the fibrocartilaginous disk and the reduction of the plate-like epiphysis of the sheep to an annulus in man. The nucleus pulposus is nearer the posterior surface of the vertebra and may be dislocated posteriorly.

The growth in transverse dimensions of the spine is determined essentially by the growth in the spinal cord. At 6 years of age the spinal canal is larger than in the adult and the spinal cord is almost adult in cross-section. This precocity in growth of the spinal cord determines the time of onset of calcification and ossification in the neurocentral synchondrosis. Moreover, the epiphysial rings above and below each vertebra are an index of the attempt so to modify and control the growth of the spine that spine length shall be almost constantly twenty-eight and a half inches in the male and twenty-four and a half inches in the female, in accord with a spinal cord length of eighteen inches and sixteen and a half inches respectively. This relative lack of variation in spine length in the two sexes accounts for the trade in ready-made shirts, coats, and corsets, of given length but varying girths. Throughout puberty and adolescence the spine does its utmost to reach its normal length, irrespective of stature.

The Intervertebral Disks

The intervertebral disks are more complicated in structure than the vertebrae themselves. The nucleus pulposus at the centre is essentially a remnant of the primitive notochord. This is surrounded by the annulus lamellosus, which consists of concentric lamellae of fibrous tissue, some of the fibres circular, some spiral. Above and below this element are two cartilage plates bounding the adjacent vertebrae. Some fibres are inserted into the cartilage plate, some into bone, and some into the anterior and posterior common longitudinal ligament. George Murray Humphry (1858) described the nucleus pulposus as a "fluid ball girt by surrounding bands of fibrous tissue . . . which the adjoining vertebrae rotated in their movements on one another." This ball-bearing function of the nucleus pulposus is of the utmost importance, for the disks as a whole are more susceptible to age changes and to injuries than the bony vertebrae themselves.

The growth of the intervertebral disks is extremely interesting. At birth the nucleus pulposus is small and the disk is relatively narrow. The lamellae of fibrous tissue develop after birth and are distinct entities at 6 months, when the child is first able to hold up its head. With age the fibrous rings grow at the expense of the adjoining cartilage plates. At birth approximately one-third of the total length of the spine is due to the disks, which are practically half as deep as the individual vertebrae. At 7 years of age and on to adult life the disks account for one-fifth of the total length, so that they are roughly one-quarter the depth of the vertebrae. But the thickness varies considerably in different parts of the spine. Between the shoulders, in the upper thoracic region, the disks are thin, in accord with the reduced movements of flexion and extension in the vertebrae of a region subjected to the pull of the large muscles of the head and neck and upper limb. The disk between the second and third cervical vertebrae is thinnest of all. In the lower dorsal region the disks gradually increase in thickness, reaching their maximum in the lumbar region. This is due partly to the range of movement between the neighbouring vertebrae and partly to the large area of the contiguous surfaces which naturally tends to restrict the range of movement.

From birth to adolescence the total depth of the disks increases from 0.3 in. to 0.7 in. in the cervical region, from 0.65 in. to 1.45 in. in the dorsal region, and from 0.42 in. to 1.7 in. in the lumbar region. Thus the outstanding feature of the spine in man is the great size of the lumbar vertebrae and still more the thickness of the lumbar disks. In all quadrupeds the epiphyses of the vertebrae are relatively thick plates instead of rings, and the disks are relatively thin. Only in man and the great apes are the plates reduced to rings and the lumbar disks increased so much in thickness. The range of movement and the large cross-sectional area in the lumbar and lower cervical spine are associated with the attempt to assume and maintain the erect attitude. Man alone has massive lumbar vertebrae, thick lumbar disks, annular epiphyses, huge buttocks, massive quadriceps, and long lower limbs. Even the gorilla, chimpanzee, and orang have failed to grow buttocks. It is only within recent years, as the result of the earlier isolated studies of Schmorl (1931) in Dresden, that the frequency of lesions in the intervertebral disks has been appreciated. More than 80 per cent. of these lesions are in the lumbar region, according to a recent report from the Mayo Clinic (Walsh and Love, 1939).

Most of the exercises found in the handbooks of physical training, if employed without due care and supervision, may tend to abuse these recently acquired and peculiarly human features of the spine. Toe-touching and trunk-twisting are fraught with danger, particularly at such ages and in such types of build as are characterized by relatively long legs and short arms. Mobility of the spine, like the back view of the torso, is largely an individual characteristic. The rough-and-tumble of ball games is less dangerous than squad drill or organized "jerks."

The Upper Limb

The shoulder-blade in childhood consists of two bony elements—the scapula and coracoid—separated by a band of actively growing cartilage. Thus the shoulder-joint comprises on the one hand the head of the humerus and on the other the glenoid cavity, consisting of two elements separated by an intervening band of cartilage, the scapula occupying two-thirds and the coracoid one-third. This cartilage is a growth cartilage and allows the glenoid cavity to grow in accord with the head of the humerus. In all the main joints of the body Nature attempts to provide facilities for growth by arranging that a convex surface on one bone shall articulate with a concave surface on another two or three bones, these bones being separated by a growth cartilage. Like all growth cartilages, the intra-articular ones are separated from the adjoining bone by a narrow band of calcified cartilage. It follows that the shoulder-joint of the growing child is much more complicated than that of the adult, in that the glenoid contains two bones, coracoid and scapula, and the articular cartilage overlies growth cartilage, calcified cartilage, and bone.

During puberty the growth cartilage ceases to grow, calcifies, and ossifies. It is at this age, when the scapula and coracoid are becoming firmly knit, that the muscles of the neck and upper limb display active growth. The development of the neck and chest is rapid, as is that of the biceps and triceps. The boy begins to "throw his weight about" in more senses than one.

Union of the epiphyses takes place at the elbow earlier than at the wrist and shoulder. Thus fairly heavy muscular work involving the elbow-joint, such as bench work, is more easily faced by the adolescent than heavy muscular work involving the wrist and shoulder, such as coal-mining, quarrying, and heaving. Any undue load on the musculature of the upper limb, such as frequent and persistent throwing of the cricket ball, or carrying a heavy hod of bricks up a ladder, is to be deprecated; for not only is there danger to the upper limb itself, particularly the shoulder-joint, but there is danger to the upper thoracic and cervical spine, to which are attached the muscles involving violent movements, such as the trapezius, and the muscles involving fixation, such as the rhomboids. Abuse of the upper limb muscles is a threat to the slender upper thoracic spinal column and the enclosed spinal cord.

Pelvis and Lower Limb

The sacro-iliac joint is formed by the auricular surface of the ilium and that of the sacrum. The sacral surface is complex, and consists of the bony costal elements of the first three sacral vertebrae, separated by fibrous tissue and cartilage. The ossification centre for the first and second sacral "ribs" is present before birth and that for the third "rib" appears soon after birth. At puberty a thin epiphysial bony plate appears in the cartilage on the auricular surface of the sacrum. This bony plate unites relatively late in adolescence and is associated with the late date of union of the first and second sacral vertebrae. Thus the sacro-iliac joint is definitely one in which the age changes and the number of separate elements involved are such as to call for the greatest care in its use. The common practice in secondary schools for girls to spend hours in jumping over a high rope is to be deprecated. Lastly, since the sacro-iliac joint is devoid of a cavity lined by synovial membrane it is, like almost all the vertebral joints, one which can be injured or diseased without pain becoming a cardinal symptom. The fact that pain may be absent in joints which are injured or diseased should be continually present in the minds of physical training instructors.

The hip-joint in the child displays the general rule that a joint will be formed if possible between more than two skeletal elements. The convex spherical head of the femur articulates with four other elements consisting of ilium, ischium, pubis, and the triradiate cartilage which separates the three constituent bones. In all animal forms the triradiate cartilage is a true growth cartilage and is separated from the neighbouring bones by thin strips of calcified cartilage. About puberty the growth cartilage ceases to proliferate, calcifies, and ossifies. The ossification is often patchy, and so accounts for the irregular features displayed radiologically in the cartilage by the so-called os acetabuli. Thus, from puberty to adolescence the hip-joint is even more complicated than the shoulder-joint. The bearing surface in the acetabulum, by reason of the growth at the triradiate cartilage, gives rise to many of the deformities and diseases of the pelvis. The hip-joint is often considered only in terms of the head of the femur. The hip-bone is forgotten.

Mention should be made of the cartilage at the conjoined ischio-pubic ramus, over which is attached the crura of the penis. Union of the two rami by calcification and ossification of the cartilage usually takes place at about 8 to 10 years of age. This area of union is liable to disease, and is particularly liable to injury by falls on the edge of a chair, rail, fence, gymnastic apparatus, or by jumping on to a bicycle. Such injury or disease is difficult to diagnose, and may eventually appear as an abscess in the adductor muscles or an osteomyelitis following an osteochondritis. Injury of any part of the pelvis may lead to bony union of the sacro-iliac joint on one or both sides.

The first thoracic nerve and ulnar nerve in association with cervical rib, and the fourth and fifth lumbar nerves in association with sacralization of the fifth lumbar vertebra, and several other anatomical anomalies, call for special care. Space does not permit a detailed account, but one may say that the ulnar nerve and the lower two lumbar nerves are always living dangerously.

Need for Caution in Physical Training

I do not wish to be regarded as an opponent of all forms of physical training, but the anatomical and physiological basis of such training is a subject which calls for cautious research on the part of all concerned. As Cathcart *et al.* (1935) state, no certain index of physical fitness, industrial or other, has yet been discovered. It is essential that we should ask if the boys and girls of this country are to be submitted to as expensive and unproductive a course in physical training as that to which they have been subjected in Latin and French. Many children in Wales have learnt to speak Welsh and English at home by 3 years of age without tears and without specialist teachers. Countless children have learnt to play, to work, and eventually to support themselves and a family without being subjected to lifting, throwing, hitting, gripping, swinging, bending, and twisting by numbers in regimental formation. To be born in a comfortable nest, den, or house, to have adequate food and unorganized free play—these are Nature's own essentials for physical training.

The ideal of *mens sana in corpore sano* is essentially a demand for two distinct attributes of mind and body that are not necessarily closely related. Between intelligence and common physical measurements such as height and weight there is but a low correlation, which decreases still further during adolescence. There is practically no correlation between mental intelligence tests and the physical measurements most commonly studied in children. There is a positive correlation between the mental test scores and the precocity of puberty in school children. On the other hand, slow rate of development is a peculiarly valuable human feature: apples which ripen most slowly last longest.

No two children progress towards maturity at the same pace, yet natural forces have a way of reducing the differences to some extent as maturity is approached. It is an impossible and unnecessary task to make all children conform to a standard rate of growth, to attain a standard developmental pattern or a standard physical performance test in terms of age.

Chronological age in itself is a snare, for the most developed of a group of 9-year-old children will often be more mature than the most immature of a group of 12-year-olds. Attempts at substituting skeletal age in terms of ossification of the carpus and hand, or mental age in terms of intelligence tests, are equally dangerous. Children are parts of the group in which they live, but they are also individuals who have a right to develop at their own pace.

Posture and Attitude

"Posture" is not a question of physical exercises, physical jerks, or training of the muscles. Posture is essentially the *nervous* (not *muscular*) mechanism which "keeps the world right side up for the organism by keeping the organism right side up to the external world" (Sherrington, 1906), as a result of the co-ordination of visual and labyrinthine stimuli with stimuli from the proprioceptive nerve endings in muscles, tendons, and joints. The midbrain contains the important group of centres concerned in the acquirement and maintenance of equilibrium and posture.

> "Posture is the solid foundation upon which perception is built, and it is of such pre-eminently vital importance to the animal that it is subserved almost entirely, even in Man, by a dyscritic (protopathic) mechanism. Posture is a relatively static condition, maintained indefinitely so long as circumstances remain relatively unaltered: so far it demands a plastic pose, subserved by tonic impulses and muscular contractions. Posture on the verge of change assumes a dynamic aspect and becomes an *attitude*, in which the distribution of tone in various muscles is in a sense precurrent—prepared for active movement" (Parsons, 1927).

Even attitude, posture on the verge of change, is subserved almost entirely by a protopathic mechanism.

Much of the physical drill is directed towards the acquirement of an attitude rather than the maintenance of a pose. The soldier on parade too often exhibits attitude—not posture. The maintenance of attitude involves continuous conscious endeavour. The maintenance of a natural posture is automatic and involves the minimum of mental and physical fatigue. A natural "posture" does not lead to fainting; a forced "attitude" may, as is so well known on parade or at morning prayers. If one watches a group of children playing "blind man's buff" one may see and analyse the various elements concerned in the maintenance of posture. The "righting reflexes" can be classified as:

1. Labyrinthine reflexes tending to restore the position of the head to the normal.
2. Reflexes arising in the muscles of the body wall so that, if the trunk be bent to the right, muscle tonus is increased on the left as a preparation for restoration of the trunk and head to the erect position.
3. Reflexes arising in the muscles of the neck as a result of the reflexes initiated in the labyrinth with a view to rapid restoration of the position of the head on the neck, irrespective of the position of the trunk and limbs.
4. Reflexes arising in the muscles of the trunk and limbs as a preparation for the necessary movement to maintain balance and equilibration.
5. Reflexes arising in the retinae with a view to acting on the muscles of the neck, trunk, and limbs in such a way as to retain the visual field so far as possible in its normal orientation.
6. Reflexes arising in the skin of the soles of the feet.

The extent to which the visual mechanism is concerned is clearly seen in the different movements, particularly of the upper limbs, in the blindfolded and the normal child. The effect is still more exaggerated if the ground surface becomes more rough and irregular, or if the blindfolded one is spun a few times, and even more so if the child is blind in one eye, deaf in one ear, crippled in trunk or limb, wry-necked, or suffering from cold feet. The maintenance of posture is controlled in most mammals by the midbrain. In fact, it is entirely so in the guinea-pig and rabbit. The visual cortex of the cerebrum is concerned with the ocular "righting" reflex to an increased degree as one passes from cat, dog, and monkey to man. One may regard the maintenance of posture as fundamentally a protopathic mechanism which in man has become augmented by an epicritic mechanism dependent upon the ocular reflexes and the power of binocular vision localized in the visual cortex.

In assessing alike the stance and the poise of children it is important to remember that the widely accepted appreciation of military "smartness" has no anatomical or physiological basis. Military drill is designed to make a group of different individuals look alike and act alike synchronously. It is the worship of uniform and of uniformity. Physical training should involve something distinct from regimentation. It should aim at the cultivation of the maximum efficiency consonant with the neuromuscular equipment of the individual.

The feats of daring, of physical and mental endurance, the lonely watches and the forced marches, whether at the Equator or the Poles, on the Himalayas or in the Arabian Desert, have been a product of the spirit of the British race, not of the gymnasium or the barrack square. Drake, Cook, Scott, Lawrence, and Somerville are not the product of any system of physical education or sport. Among the golden words of the English language are those in Captain Scott's farewell letter to his wife:

> " Make the boy interested in natural history if you can; it is better than games: they encourage it at some schools. I know you will keep him in the open air.
>
> " Above all, he must guard and you must guard him against indolence. Make him a strenuous man."

Bodily Habitus, Constitution, and Health

In the Report on the Primary School (Harris, 1931), when discussing the four physical types—hypersthenic, sthenic, hyposthenic, and asthenic—it was emphasized that any one type of bodily habitus and visceral topography cannot be radically altered. Concentration should be directed towards making each child efficient within his group. In view of recent attempts to classify children in terms of psychological characters in relation to bodily habitus a word of warning is necessary. There is much nonsense talked about " constitutionalism." Prejudices, beliefs, sentiments, and that authoritarianism which is the pitfall of the educationist play a large part in the prevailing fashionable beliefs. The canons of statistical sampling are rarely satisfied, and it is essential that much of the fashionable talk about the pyknic child or the asthenic child, particularly in relation to his mental and emotional qualities, should be recognized as the result of amateurism and unwarranted speculation. In a recent survey of 500 asthmatic and 500 rheumatic children in one of the large hospitals (Young, 1933) no distinct difference in anthropometric measurements or body build was found.

Mankind has always been dominated by a belief in the mental significance of particular physical features. Chaucer, Shakespeare, and Dickens have impressed upon us an association of this type. Modern playwrights, novelists, and, above all, the cinema, exaggerate it. At present there is no scientific evidence that any of the accepted criteria of the relation of mental qualities to physical traits are sound. Goring (1913) effectively destroyed the belief that the possessor of the " high brow " was more intelligent than he of the " low brow." Pearson (1906) has proved that " it is impossible to use head size as a basis for judgment as to intelligence." He proved that eye colour and hair colour are as closely related to intelligence as are head diameters.

The intelligence tests of Binet, the study of skeletal development by *x* rays, the measurement of height and weight of the body, and of the head in particular, have yielded nothing more definite than that little correlation exists between mental and physical status. On the other hand, the various attempts to correlate the type of body build with temperament have been somewhat more successful. Draper (1930) in America is of the opinion that certain types of body build are associated with a predisposition to certain diseases. Kretschmer (1925) in Germany connects body build with temperamental disposition. It is probable that Alfred Adler's (1938) theory of " organ inferiority," based upon a demonstrable physical deficiency, is the only field in which definite correlation has been proved between physique and temperament.

In short, apart from disease of the central nervous system and grave physical defects, the prevailing notions as to the relation of *mens sana* and *corpus sanum* have been grossly exaggerated. Malnutrition, poverty, dirt, and even a succession of acute or chronic diseases do not seem able, of themselves, to subdue the master organ of the body, the brain, to any considerable extent. On the other hand it is obvious that malnutrition, poverty, dirt, disease, and war do wipe out individuals, families, and races. The effect on the race or the breed should not be confused with the effect on the brain of the individual.

The psychological effects of class gymnastics have not been considered any more than the psychological effects of grooming, dress, and personal adornment. The present problem is anatomical and physiological. Growth, development, posture, like health, depend to a large extent on the freedom for the individual to join in any play, game, or sport, to exert himself according to his powers, and to know when he has had enough. Food, fun, and frolic are of more importance than drill and discipline.

Summary

The pattern of growth in the spine, upper limb, and lower limb is described.

The difference in the structure of the spine in man from that of quadrupeds is discussed in its relation to the assumption of the erect attitude in man.

Posture is considered as a nervous mechanism, and emphasis is laid on the importance of the " righting reflexes."

The fixity of bodily build or habitus in an individual is emphasized.

Food, play, and free unorganized games in early childhood are discussed in their connexion with healthy growth and physical training.

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Asthma.—In thirty-seven of fifty unselected cases of bronchial asthma from a clinic for allergic cases an emotional component could be seen in the aetiology of their attacks. The thirteen others were predominantly young males. Of those with a large emotional component only 20 per cent. were benefited by somatic therapy, as against 54 per cent. of the " non-emotional group." Thirty of the patients showed long-standing neurotic traits, usually of an obsessional character.—Psychiatric Survey of Fifty Cases of Bronchial Asthma. T. N. McDermott and S. Cobb.—*Psychosomatic Med.*, April, 1939, **1**, 203.

SULPHAPYRIDINE (M & B 693) AND PNEUMOCOCCAL INFECTIONS*

BY

H. L. MARRIOTT, M.D., F.R.C.P.
Assistant Physician, Middlesex Hospital

The purpose of this paper is to review briefly the main facts relating to sulphapyridine, and particularly to deal with its use in combating pneumococcal infections. Although only eighteen months have elapsed since Lionel Whitby[1] first published his discovery of the value of sulphapyridine, yet in this short time a large number of papers concerning it have been published in many countries. It is now established that sulphapyridine is a most effective agent against infections by pneumococci of all types.[1-6] In its action against the pneumococcus it represents an outstanding medical advance, for it is superior to specific antiserum and unapproached at present by any other sulphonamide compound. The chief evidence for these statements has been provided by the case series[7-26] summarized in Table I, reporting results in lobar pneumonia from various parts of the world. It has uniformly been found that the average gross mortality of cases treated with sulphapyridine is about 5 to 8 per cent., as compared with 20 to 30 per cent. in the former experience of the hospitals concerned or in control series.

TABLE I.—*Mortality of Cases of Lobar Pneumonia Treated with Sulphapyridine*

	Total of Treated Cases	Deaths
Africa :		
Agranat *et al.*[7]	98	8
Anderson and Dowdeswell[8]	50	1
Canada :		
Graham *et al.*[9]	50	3
Meakins and Hanson[10]	30	1
Denmark :		
Alsted[11]	28	1
Eldahl[12]	54	4
Hjorth[13]	28	0
Lundsteen and Mogensen[14]	39	2
Finland :		
Saltzman[15]	100	6
Great Britain :		
Anderson *et al.*[16]	70	6
Banks[17]	30	0
Dyke and Reid[18]	8	0
Evans and Gaisford[19-21]	627	34
Marriott[22]	25	0
Norway :		
Römcke and Vogt[23]	254	11
U.S.A. :		
Janney-Smith and Needles[24]	50	4
Pepper *et al.*[25 90 91]	400	28
Williams and Morgan[26]	50	1
Totals	1,991	110

Average mortality, 5.5 per cent.

These series contain patients of all ages, but no series entirely composed of children is included. In the series of Agranat *et al.* I have excluded their native miner groups as being not comparable with the other series. In these miners so excluded there were only two deaths in 172 cases.

In regard to infections by organisms other than the pneumococcus, the value of sulphapyridine relative to other sulphonamide compounds awaits final definition. Present opinion[1-6 27] suggests that: (1) it is about equal, or slightly superior, to sulphanilamide against haemolytic streptococci, meningococci,[28-33] Friedländer's bacillus, *Clostridium welchii,* and *B. coli*[34]; (2) it is the most effective of the sulphonamides against the gonococcus[35-44]; (3) it is the least ineffective against *Staphylococcus aureus*[22 45-47] and *Streptococcus viridans*[4 22 48]; (4) it may be of value against *B. typhosus,*[49] *B. pestis,*[50] and *B. influenzae.*[51] At the present time sulphapyridine is undoubtedly the drug of choice for empirical use in any fever of uncertain causation probably due to bacterial infection.[27]

Pharmacology of Sulphapyridine

Sulphapyridine is chemically 2-sulphanilyl-aminopyridine. It is a white powder, almost insoluble in water. It is, however, fairly rapidly absorbed[52-54]; the maximum blood concentration from a single dose is usually reached in about four hours. Thereafter the concentration slowly falls to zero in approximately forty-eight hours. In the blood the free form of the drug is slowly converted to the conjugated or acetylated form; the former is said to be therapeutically active, and the latter, which is even more insoluble, is said to be inactive. In twelve hours about half the sulphapyridine from a single dose is acetylated. The rate of acetylation appears to vary in different persons; it has been suggested that it may bear relation to the metabolic rate.[55] The kidneys are almost the sole channels of sulphapyridine excretion, and the free and acetylated forms are found in the urine in various amounts.[56] In the body fluids, such as cerebrospinal fluid, pleural fluid, or pus, the concentration of sulphapyridine is usually between 50 per cent. and 100 per cent. that of the blood at the same moment.[5 9 30 54 56] The ready distribution of sulphapyridine between the blood and the body fluids renders intrathecal or intrapleural administration unnecessary.

How sulphapyridine produces its remarkable effects is still unknown.[57 58] Both *in vitro* and *in vivo* there is a lag period of six hours during which organisms multiply in spite of contact with the drug. Then the organisms increasingly die off[1 2 57] from what appears to be direct action of the drug upon them.[1 2 59 60] It may be that the effect of the drug is the production of bacteriostasis, from starvation of the organisms due to inhibition of their enzymes,[57 67] and that the body does the actual killing of the invaders.[61-65] However, there does not seem as a rule to be any evidence of exceptional stimulation of the body's defence mechanisms,[57] nor indeed of interference with them.[66]

Pneumococcal Infections of the Respiratory System

As before stated, the outstanding value of sulphapyridine against the pneumococcus was first convincingly demonstrated clinically in relation to lobar pneumonia. This demonstration was achieved by Evans and Gaisford[19] following upon Whitby's discovery of the potency of sulphapyridine in the treatment of pnenumococcal infections in mice.[1] The well-defined clinical course of lobar pneumonia renders recognition of the beneficial effect of the drug easy. Many confirmatory series[7-26] and striking individual cases[59 69-74] have been published. The principal points now established concerning the sulphapyridine treatment of lobar pneumonia are:

1. The average reduction in gross mortality is such that three patients out of four who would formerly have died may now live.

2. Sulphapyridine is particularly valuable in severe cases with bacteriaemia.

3. The drug is as effective in the elderly as in the young. In persons of 50 and upwards gross mortality in the past[20 23 75 76] has usually been accepted as approaching in percentage figures the figures of the subjects' ages. In Table II are extracted from the main case series,[7-26] which give the requisite data, the mortality of all patients aged 50 or more treated with sulphapyridine. The average mortality is seen to be 16.6 per cent.

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* Partly based on a paper prepared for the Annual Meeting of the Danish Medical Society to have been held on September 24, 1939, at Aarhus.

TABLE II.—*Mortality of Cases of Lobar Pneumonia, aged 50 or More, Treated with Sulphapyridine*

	Total of Treated Cases	Deaths
Agranat *et al.*[7]	15	1
Graham *et al.*[9]	15	3
Meakins and Hanson[10]	6	1
Alsted[11]	5	0
Eldahl[12]	14	3
Hjorth[13]	8	0
Lundsteen and Mogensen[14]	14	2
Anderson *et al.*[16]	9	3
Dyke and Reid[18]	2	0
Evans and Gaisford[19-21]	86	21
Marriott[22]	9	0
Römcke and Vogt[23]	61	8
Pepper *et al.*[25]	124	19
Totals	368	61

Average mortality, 16.6 per cent.

4. Sulphapyridine appears to be very effective against pneumococci of all types.

5. Within twenty-four to thirty-six hours of sulphapyridine being begun, irrespective of the day of the disease, the temperature falls by rapid lysis and there is usually remarkable improvement in the patient's general condition. Uneventful recovery in most cases ensues, but the local condition in the lung does not seem to undergo resolution any faster.

6. The incidence of empyema appears lessened, but clear pleural effusions are commoner. Evans and Gaisford[20] regard the latter as empyemata aborted by sulphapyridine, since in their experience the total of empyemata plus clear effusions is the same as used to obtain for empyema alone.

7. In cases of lobar pneumonia treated with sulphapyridine specific agglutinins against pneumococci develop between the fifth and twelfth days of the disease as they do in untreated cases[66]; their appearance is unaffected by the drop in temperature caused by the drug. This development of agglutinins by the body does not occur in cases effectively treated with specific anti-pneumococcus serum.[66]

The excellent results in lobar pneumonia are paralleled in the less clearly defined pneumococcal chest infections. Results in bronchitis, bronchopneumonia,[11 19 23 58] and post-operative pneumonia[68] are good.

Pneumococcal Meningitis and Peritonitis

Pneumococcal meningitis has in the past been generally considered to be invariably fatal. Sulphapyridine permits revision of the hopeless prognosis, though the condition is still to be regarded as very serious. A number of cures[77-84] and a number of failures[81 85-87] have been reported. In meningococcal meningitis sulphapyridine, like sulphanilamide, is extraordinarily successful. Not infrequently in practice the exact bacteriological diagnosis in a case of meningitis is not immediately obtainable. In all such cases, where the infecting organism is in doubt, sulphapyridine should be given[81] because not only is it the best agent against the pneumococcus, but it is as good as or better than sulphanilamide against meningococcal, streptococcal, and staphylococcal infections.

The prognosis in pneumococcal peritonitis is also likely to be very much changed for the better by sulphapyridine. Barnett and his associates[58] record three cases of pneumococcal peritonitis in children treated with sulphapyridine (one received serum too), and MacColl[88] has also published a similar case. All four recovered. Chemotherapy,[120] combined with the other recently introduced measures of gastro-duodenal suction drainage and continuous parenteral fluid administration, will enormously reduce the mortality in all forms of peritonitis.

Toxic Effects of Sulphapyridine

Dangerous toxic effects from sulphapyridine in therapeutic doses are rare.[7-26] Gaisford, Evans, and Whitelaw,[89] in more than 1,000 cases, have not met with any serious complications due to the drug. Pepper and his associates[25 90 91] have administered sulphapyridine to 500 patients without a death attributable to it.

Nausea or vomiting occurs in about half of all patients receiving sulphapyridine; the incidence is said to be less in children. In addition many patients feel depressed and languid and may have headache. These effects are unpleasant but not of serious significance. The vomiting appears most likely to be due to a central effect rather than to local gastro-irritation as was at first supposed. Cyanosis is less often seen with sulphanilamide. According to Campbell and Morgan[92] the cyanosis due to sulphapyridine is from methaemoglobinaemia and not from sulphaemoglobinaemia as with sulphanilamide. Methaemoglobinaemia does not persist as long as sulphaemoglobinaemia. If considered to be dangerous, because affecting already anoxic patients, it may be quickly abolished by the administration of methylene-blue.[9 56 92] This should very seldom be necessary.

Not strictly a toxic effect, but an effect consequent upon its insolubility, is the formation in the urine of jagged crystals or small calculi of acetylated sulphapyridine. The subject has been studied in laboratory animals.[93 94] In patients receiving sulphapyridine red cells are found in the urine in a small proportion of cases. Rarely, gross haematuria, ureteric or bladder pain, and anuria may occur.[9 12 21 25 95 98] Such effects have, however, been inconspicuous in the experience of observers of large series.[7-26] There is evidence that they are commoner in children, perhaps because of relatively larger dosage.

When sulphapyridine administration is continued beyond five days, which should not as a rule be necessary, drug fever and rashes[99 100] become unpleasant and not infrequent features. The rarer but very dangerous manifestation of granulocytopenia may also occur.[101-110] With drug fever the temperature may rise as high as 104° F. The rashes[99 100] usually resemble the rashes of measles or German measles; occasionally they are urticarial or scarlatiniform. Differential diagnosis from the mentioned specific fevers may be difficult.

Dosage and Practical Points in Administration

It is necessary in treating pneumonia to aim at securing and maintaining a blood concentration of sulphapyridine of not less than 4 mg. per 100 c.cm. In adults this level is usually achieved by a dosage of 2 grammes, followed in four hours by 2 grammes, followed by 1 gramme four-hourly.[2] What sulphapyridine does it does quickly, but at the same time too early discontinuance may lead to relapse from spread of infection. Hence, after the patient has received a total of 18 grammes on the above scheme of dosage (that is, after two and a half days) the dose should be reduced to 0.5 gramme four-hourly for twenty-four hours and then to 0.5 gramme eight-hourly for thirty-two hours—a total of 23 grammes administered on a decreasing scale during five days.

For children the dosage should be in proportion to the body weight,[19] but it is desirable to increase the dose relative to that of adults by 50 per cent. to secure adequate blood concentrations of sulphapyridine. Wilson and his collaborators[111] advise doses equivalent to twice those usually given to adults.

The estimation of sulphapyridine in the blood and body fluids is possible by relatively simple methods,[6 64 112-114] and checking of the blood level is important if there is any doubt in regard to the attainment of an adequate concentration. This may be of particular importance if there is much vomiting. The same dosage should be used whether the infection is mild or severe.[3] The tablets should be administered crushed and suspended in water, milk, or fruit juices. In general the course of treatment should be neither less nor more than five days. Less may result in incomplete cure. More brings the risk of complications,[2] and particularly the grave danger of granulocytopenia; if continuance is deemed desirable, then close watch should be kept on the skin and temperature, and blood counts should be made on alternate days.

In all cases the ordinary general measures of medical and surgical treatment should be carried out. An adequate intake of fluid is of the greatest importance to avoid urinary crystallization.[97] Five pints (2,850 c.cm.) per twenty-four hours should be taken by an adult. The urine must be measured, and an output of less than 50 oz. (1,400 c.cm.) per twenty-four hours regarded as unsatisfactory. The urine should be examined daily for blood. Liberal administration of glucose is desirable not only because of its nutritional value but because it helps to prevent nausea and vomiting. In anoxic cases oxygen administration should not be delayed; Whitehead and Carter[74] suggest that it may abolish nausea and vomiting.

Sulphapyridine is not a substitute for surgery. Collections of pus must be drained in accordance with established general principles. Vomiting is not an indication for stopping or reducing sulphapyridine. If administration is persisted with it is often found that the vomiting decreases or ceases.[2 9] If an adequate blood concentration of sulphapyridine is not being sustained, then it may be necessary to pursue administration by the rectal introduction[56] or intramuscular[84 89 117] or intravenous[118] injection of the soluble sodium salt.[3 115 116] This salt is now put up in ampoules containing 1 gramme in 3 c.cm. This amount may be given intramuscularly four-hourly. It should not be given subcutaneously because its high alkalinity causes severe pain and may induce sloughing. The technique of intravenous administration is not fully worked out; there would seem to be considerable possibilities in continuous-drip administration of dilute solutions. It might be possible to achieve rapidly and regulate accurately optimum blood levels.

When sulphapyridine is being administered it may induce photosensitivity in the patient. Hence exposure to strong natural or artificial sunlight must be avoided; such exposure may result in severe dermatitis.[101] During the time the drug is being given it is very important that other drugs with a tendency to produce granulocytopenia, such as amidopyrine, should be avoided. In conditions such as gonorrhoea sulphapyridine may sometimes unavoidably be administered to ambulant patients. Like the other sulphonamide drugs, it may produce impairment of judgment of speed and distance.[119] Patients taking it should be prohibited from driving cars or flying until two days after the last dose.

There is no antagonism between sulphapyridine and any form of associated treatment.[3] In particular there is no reason why it should not be used in conjunction with serum[121 122] or vaccines[61-64] in pneumonia or other conditions.

Summary

The main facts relating to sulphapyridine are reviewed and special attention is paid to its use in pneumococcal infections.

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In maintaining the flow of arms and munitions the health and well-being of the industrial worker is clearly of the utmost importance, and no single factor has greater influence than the provision for nourishing and attractive meals during the hours of work. Industrial canteens have long been established, but the conditions of war production are likely to increase their usefulness greatly and to add to the number of firms who find it necessary to make arrangements for meals during working hours. The extension of the hours of work, the increase of night shifts, difficulties in transport, "black-out" conditions, all contribute to the strain of war-time production; the evacuation of the family often includes the wife of the industrial worker, and the industrial canteen to-day not only meets the needs of the workers during work hours, but in many factories canteens are already providing facilities for breakfasts and suppers for those workers who are left without anyone in their homes to prepare these meals. How best to organize canteen facilities is the practical question which the Industrial Welfare Society has attempted to answer in a booklet, *Canteens in Industry*, issued at 1s. from 14, Hobart Place, S.W.1. Though primarily concerned with the organization of canteens in industrial concerns, most of the booklet should be no less useful to those responsible for the provision of meals in schools, hospitals, or other institutions, or to those now arranging meals for evacuated school children and mothers and for A.R.P. workers.

PRODUCTION OF ANTIGONADOTROPHIC ACTIVITY IN MAN BY INJECTION OF EXTRACT OF PREGNANT MARES' SERUM

BY

I. W. ROWLANDS, Ph.D.
National Institute for Medical Research, Hampstead

AND

A. W. SPENCE, M.A., M.D., F.R.C.P.
Assistant Physician and Cattlin Research Fellow, St. Bartholomew's Hospital

The presence of a gonadotrophic substance in the serum of mares during the second and third months of pregnancy was discovered by Cole and Hart (1930). Highly purified extracts are now prepared from this source and are used clinically for various manifestations of hypogonadotrophism. In common with gonadotrophic extracts of the anterior pituitary gland and of human urine of pregnancy, the prolonged injection of extract of pregnant mares' serum to animals of a different species from that from which the preparation originated does not cause prolonged stimulation of the reproductive organs (Meyer and Gustus, 1935). This refractoriness is caused by the appearance in the blood of inhibitory substances, which can be demonstrated by the fact that the serum of desensitized animals has the power to inhibit, in other test animals, the activity of the extract in question.

The formation of these substances in the blood as the result of prolonged treatment with gonadotrophic extracts is likely to set a limit to their use as therapeutic agents. It was observed previously, however, by Spence, Scowen, and Rowlands (1938) that the prolonged administration to human patients of extracts prepared from the urine of pregnant women did not evoke the formation of these inhibitory substances, so that treatment could be carried on indefinitely. The presence of such inhibitory substances in the blood of man treated with extract of the serum of pregnant mares does not seem to have been demonstrated, but, as will be seen below, they are undoubtedly produced. It is obvious, therefore, that to continue treatment after such substances have formed would be futile, as most, if not all, of the extract would be neutralized in the circulation. Until a level of dosage and a method of spacing the injections have been found which will not induce the formation of these inhibitory substances care must be exercised in the clinical use of extracts of pregnant mares' serum.

Methods

PRODUCTION OF ANTISERUM

Nine patients with undescended testes were injected intramuscularly with a gonadotrophic extract prepared from the serum of pregnant mares by N.V. Organon (Oss, Holland). The extract was assayed in "rat units" by the manufacturers, there being at that time no international unit. An international standard and a unit defined in terms thereof are now being established,* however, and enough information is available to allow of an approximate estimate of the activity, in international units, of the serum preparation used. The manufacturers stated that 150 μg. was equivalent to 1 "rat unit," but the dosage is recorded here in milligrammes—1 mg. being found to be approximately equal to 80 international units.

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* See *Bulletin of the Health Organization of the League of Nations*, 1938, **7**, 894.

Three of the patients (Nos. 32, 19, and 18) were injected daily for twelve weeks with 6, 12, and 13.5 mg. respectively. The remaining six patients were divided into two groups: (*a*) three (Nos. 24, 25, and 26) who were injected with 18 mg. twice weekly for twelve weeks; and (*b*) three (Nos. 22, 23, and 27) who were injected with 36 mg. twice weekly for a similar period.

Immediately before treatment blood samples were taken from the median basilic vein, and subsequently as near as possible four, eight, ten, and twelve weeks after treatment was begun. To determine the rate of disappearance of the substance, samples were also taken, usually two, four, and eight weeks, and if necessary at a later stage, after treatment.

BIOLOGICAL ASSAY

The extract of pregnant mares' serum used in all the biological assays was the same as that employed in the production of the antisera. The extract was assayed for gonadotrophic activity by its ability to increase the weight of the ovaries of the immature rat. Groups of ten to twenty rats weighing 40 to 50 grammes were injected subcutaneously once daily for five days with different amounts of extract. The animals were killed twenty-four hours after the last injection, and their ovaries and uterus dissected, fixed in Bouin's fluid overnight, and on the following day weighed from 70 per cent. alcohol. A dose/response curve was drawn from the results, which are given in Table I. The antigonadotrophic activity of the serum was assayed by its ability to inhibit this response to the gonadotrophic extract when injected simultaneously.

TABLE I.—*Gonadotrophic Activity of the Extract of Pregnant Mares' Serum*

Number of Rats per Group	Total Amount of Extract Injected (mg.)	Average Weight of Ovaries (mg.)
10	0	10
20	0.25	33
10	0.375	56
20	0.5	91
10	0.75	131
10	1.0	203

In all tests on the inhibitory activity of the sera a standard total amount of 0.5 mg. of extract was injected. Both serum and extract were injected into groups of five immature female rats once daily for five days; injections were made into opposite flanks of each animal. The ovaries were weighed as described above. The antigonadotrophic activity of the serum was determined as follows:

An amount of serum was injected which was estimated to cause a partial reduction in the response (weight) of the ovaries to the standard amount of extract. From the dose/response curve the amount of extract was calculated which, given alone, was required to produce the same ovarian weight as that resulting from the combined injection. The difference between this calculated amount and 0.5 mg. would therefore represent the amount of extract inhibited by the quantity of serum injected into the test rat. The results are expressed throughout as the number of milligrammes inhibited by 1 c.cm. of serum.

Results

The Development of Antigonadotrophic Activity.—The results obtained are shown graphically in Figs. 1–3. No

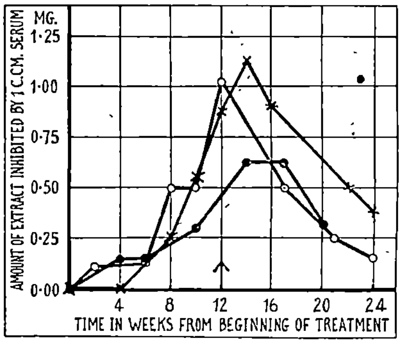

FIG. 1.—Antigonadotrophic activity of the serum of three patients injected daily with extract of pregnant mares' serum. × = patient No. 32, injected with 6 mg.; ● = patient No. 19, injected with 12 mg.; ⊙ = patient No. 18, injected with 13.5 mg.

The arrow in each figure indicates the time when treatment was stopped.

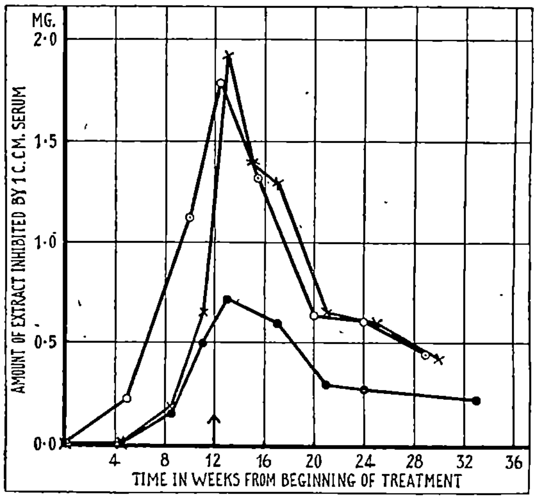

FIG. 2.—Antigonadotrophic activity of serum of three patients injected bi-weekly with 18 mg. of extract. × = No. 24; ● = No. 25; ⊙ = No. 26.

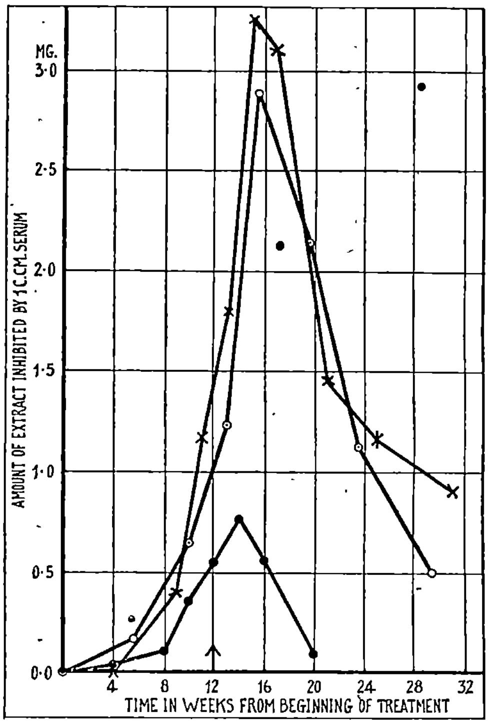

FIG. 3.—Antigonadotrophic activity of serum of three patients injected bi-weekly with 36 mg. of extract. ✱ = No. 22; ● = No. 23; ⊙ = No. 27.

antigonadotrophic activity could be detected in the serum of any of the patients before treatment began. After about six weeks' treatment, whether by daily or by twice-weekly injection, the serum of most of the patients contained some antigonadotrophic activity, which, on the whole, rapidly increased throughout the remainder of treatment. In most patients little, if any, increase in the activity occurred after the treatment was stopped. However, the activity of the serum of two patients (Nos. 22 and 27) injected with 36 mg. twice weekly continued to rise for another four weeks. One week after the end of treatment 1 c.cm. of each serum neutralized 1.8 and 1.35 mg. of extract respectively, whereas three weeks later the same amount of serum inhibited 3.3 and 2.85 mg. respectively. The total volume of serum being assumed to be 1.5 litres, it can be calculated that about 4.5 grammes of the extract would be neutralized completely by the total antigonadotrophic activity in the blood of each of these patients. Each patient had received only 0.864 gramme of extract. The antigonadotrophic substance in the circulation alone at the end of the course was therefore enough to neutralize more than five times the total quantity injected. After reaching its maximum the activity diminished, at first rapidly, but subsequently more gradually, so that in most cases it was still demonstrable three months or more after treatment was terminated.

Specificity of the Action of the Serum.—Some antigonadotrophic sera, in addition to inhibiting the action of the extracts used in their production, can also inhibit the action of gonadotrophic extracts prepared from other sources. A number of cross-reactions between various extracts and their antisera carried out by Rowlands (1938) showed that an antiserum prepared in rabbits to an extract of pregnant mares' serum was highly specific in that it inhibited only extracts prepared from this source. This specificity was also observed in the present experiments. Thus the serum of patient No. 18, at the time when it contained its maximum antigonadotrophic activity, did not neutralize the action of extracts of human pituitary tissue or human urine of pregnancy. The results are summarized in Table II, which shows that the simultaneous administration of the antiserum did not reduce the response of the ovaries of rats injected with the extracts of human origin. It is concluded, therefore, that the antigonadotrophic substance present in the blood of patients treated with extracts of pregnant mares' serum would not inhibit the gonadotrophic hormone secreted by the patients' own pituitary glands, nor is it likely to inhibit the action of gonadotrophic extracts prepared from other sources. Some proof of this was obtained clinically.

TABLE II.—*The Effect of Antiserum to Extract of Pregnant Mares' Serum on the Gonadotrophic Activity of the Human Pituitary Gland and on that of the Urine of Pregnant Women*

Extract Given	Total Amount of Extract Injected (mg.)	Serum Given	Total Amount of Serum Injected (c.cm.)	Average Weight of Ovaries (mg.)
Human pituitary gland (AP 47) -	2	—	—	40
" " "	2	No. 18	1	42
Urine of pregnancy(UP 10)	1	—	—	30
" " "	1	No. 18	1	30

Clinical Effect of Extract of Pregnant Mares' Serum.—In none of the patients was any improvement in the position of their testes observed at the end of twelve weeks' treatment. This might be due to an inherent ineffectiveness of this type of gonadotrophic extract for this condition, but it seems much more probable that it is the result of the development of refractoriness. If this were so, then the extract which was injected would almost certainly be neutralized in the blood of the patient, thus rendering it ineffective. Three months after treatment with extract of pregnant mares' serum was discontinued, treatment with bi-weekly injections of gonadotrophic extract of human urine of pregnancy (" pregnyl ") was instituted. As the majority of the patients have only just begun this form of therapy a full description must be deferred. It may be mentioned, however, that of three patients (Nos. 18, 19, and 23) who have received the full course of treatment with the urinary extract, two (Nos. 18 and 19) responded favourably, a successful result being obtained after two and four months respectively. Three other patients with undescended testes, whose blood was not assayed for antigonadotrophic activity, were treated with extract of pregnant mares' serum for twelve weeks, two patients receiving 18 mg. and one 12 mg. intramuscularly twice weekly. At the end of treatment no improvement was observed. They were then treated with extract of human urine of pregnancy without any intervening rest period between the two forms of therapy. A successful result was obtained in one patient after two and a half months.

Thus three patients who did not respond to extract of pregnant mares' serum responded subsequently to extract of human urine of pregnancy, in spite of the presence in their blood of a substance inhibitory to the former extract. This, therefore, is a further demonstration of the specificity of the antigonadotrophic substance produced by extract of pregnant mares' serum, and, although the number of cases so far is small, it suggests that extract of human urine of pregnancy is more effective than extract of pregnant mares' serum in treating this condition.

Discussion

The data recorded above provide information on two points—(*a*) the relation between amount and method of dosage and degree of antigonadotrophic activity evoked, and (*b*) the rate of disappearance of this inhibitory activity after the end of treatment. It appears that the degree of antigonadotrophic activity is not proportional to the amount of extract injected. The activity of the serum of the patients treated with bi-weekly injections was nearly twice as great as that of the patients given daily injections, although the latter received the same or even greater total amounts. Moreover, the activity of the serum of patient No. 32, who was injected daily with 6 mg. of extract, was as great as that of either of the other patients injected daily with 12 and 13.5 mg. respectively. The method of bi-weekly injections appears to be more conducive to the formation of inhibitory sera, as shown by the fact that the activity of the serum of two of the patients injected with 18 mg. of extract twice weekly was greater than that of the serum of the patients injected with 13.5 mg. daily—two and a half times the total weekly amount.

The intensification of antigonadotrophic activity after the treatment had been discontinued, such as was observed in two of the three patients who received the larger bi-weekly injection, is unusual in our experience. It is difficult to explain why it should have occurred in these patients and not in Nos. 18 and 19, who were injected with an even greater weekly amount of extract. Until further confirmation of this is forthcoming it would be premature to discuss the significance of this finding.

Summary

Antigonadotrophic activity was demonstrable in the serum of nine patients with undescended testes who were injected intramuscularly, either daily or twice weekly, for twelve weeks with an extract of the serum of pregnant mares.

The antigonadotrophic activity (*a*) developed after four to six weeks' treatment, and subsequently in most cases rose rapidly; (*b*) was not proportional to the amount of extract which was injected; (*c*) usually decreased at the end of treatment, but was still present for three months or more—in two patients, however, activity increased for about three weeks after injections were discontinued; (*d*) was greater in patients who received twice-weekly injections of extract.

The previous observation of Rowlands (1938) on the specificity of a similar antiserum, raised in rabbits, was confirmed. The human antiserum did not inhibit, in immature rats, the action of extracts of either human pituitary gland or urine of pregnancy.

No improvement in the position of the testes of the patients was observed during treatment with this extract, but in three of six patients subsequently treated with extract of urine of pregnancy descent of the testes was successfully obtained.

We desire to thank Dr. A. N. Macbeth of N.V. Organon for supplies of the extract of pregnant mares' serum and extract of human urine of pregnancy ("pregnyl").

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BRONCHOGRAPHY*

BY

E. J. GILROY GLASS, M.B., F.R.C.S.Ed.

Assistant Surgeon, Ear, Nose, and Throat Department, Nottingham General Hospital; Laryngologist, City Hospital, Nottingham

Bronchoscopy has its limitations. For example, the upper lobe bronchus, except for a very small portion at its mouth, cannot be explored, and the lesser bronchi of the middle and lower lobes are too narrow to permit the passage of a bronchoscope. As pulmonary disease frequently affects just those parts which are invisible, how can this difficulty be overcome? Bronchography will, to some extent, provide a remedy. By the injection of radio-opaque oil the whole bronchial tree can be demonstrated with little or no distortion on the fluoroscopic screen. The projection of a mere shadow cannot, of course, have the accuracy of direct vision, but it is an excellent substitute. Originally it was for therapeutic reasons that lipiodol was injected into the lung by Lafay (1901). Twenty-one years later it was advocated as a contrast medium by Sicard and Forestier (1922).

Clinical Application

The importance of bronchography has developed with the advance of thoracic surgery. In bronchiectasis the smaller bronchioles beyond bronchoscopic vision are principally affected, and great scope is therefore provided for bronchography. It is upon the injection of radio-opaque oil that we must rely for confirmation of the diagnosis and for the determination of the extent of the lesion.

Neoplasms also afford a considerable field for bronchography, especially as there may be no endoscopic signs when the smaller bronchi are invaded. Now these are the cases most suitable for operation. A bronchogram demonstrating blockage of a bronchiole, taken in conjunction with clinical and other radiological signs, will make diagnosis of neoplasm possible at a stage when lobectomy holds out a good prospect of success. Investigation of an obscure shadow seen in the radiological examination of the chest may call for the determination of its relation to the bronchial tree on the one hand and the mediastinum on the other. Here a bronchogram is most helpful, particularly if bronchoscopy has been negative.

Interpretation

Nowadays lobectomy is being more frequently performed for the treatment of bronchiectasis, and the accurate interpretation of a well-taken bronchogram is essential for the success of the thoracic surgeon. In bronchiectasis the ideal case for lobectomy would be one confined to a lower lobe, and it is as well to point out here that lobectomy will fail in such a case if cavitation of the lingula has escaped recognition. Bronchography alone will avert this and enable the surgeon to deal with the lower lobe and the lingula at the same time. To investigate a case completely a series of bronchograms of both lungs is essential.

It must be realized that in the antero-posterior film the upper lobe overlaps the greater part of the lower lobe, and it may be impossible to determine whether a dilated bronchus lies in the upper, middle, or lower lobe. A lateral film is therefore a *sine qua non*, and only one lung must be delineated, otherwise the bronchial shadows of the opposite side will obscure the view. Stereoscopic pictures are difficult to obtain and have not proved of the same value in bronchography as in ordinary chest photography.

Technique

To satisfy the requirements of the surgeon the injection of radio-opaque oil must be confined to one lung, or even one lobe of a lung. There is a choice of two methods: the oil may be injected under direct vision through a bronchoscope or through a catheter inserted into the bronchial stem under fluoroscopic guidance. The bronchoscopic method has been extensively used but has drawbacks, as pointed out by C. L. Jackson and Bonnier (1937) of Philadelphia. I will quote their words: "Too much of the lipiodol was coughed out, especially in children; and often there was some delay in transportation of the patient to the *x*-ray department or in taking the picture." The instillation of lipiodol by means of a catheter passed into the trachea was first described by Iglauer (1926), and modifications of the method have been in use ever since. By this means radio-opaque oil can be delivered into any part of the bronchial tree under fluoroscopic control. The manipulation is simple and is free from danger. Attention to detail is, however, essential to success.

In adults the pharynx and larynx are anaesthetized with 10 per cent. cocaine or one of its substitutes. My preference is for 2 per cent. decicaine (pantocaine), which produces sufficient anaesthesia and is less toxic. A fine spray is used for the pharynx, and for the glottis either a laryngeal spray or the fractional instillation of Luken, which has the advantage of anaesthetizing the trachea and thus inhibiting the cough reflex. A soft rubber catheter

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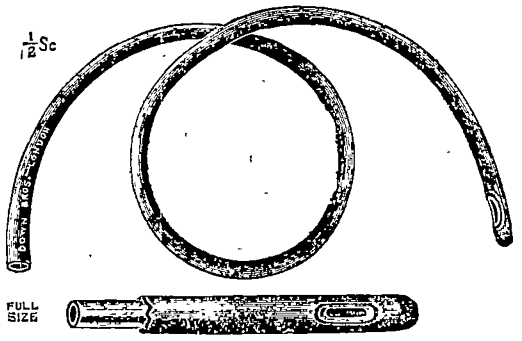
* Read in opening a discussion in the Section of Oto-rhino-laryngology at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

(16 F gauge) is threaded on a curved stylet. The tip is passed through the glottis by indirect laryngoscopy. With the stylet *in situ* the catheter is slipped forward until some three inches have entered the trachea. The stylet is then withdrawn, and the catheter advanced till only the proximal two inches project from the mouth. At this stage there is generally some coughing, which soon subsides, but if it persists a little local anaesthetic should be injected through the catheter. This will prevent recurrence of cough when the oil is injected. The upper end of the catheter should now be anchored to the cheek with adhesive strapping and the patient transferred to the *x*-ray department.

I have found that the use of a catheter with a malleable radio-opaque tip is a great advantage in directing it by fluoroscopic guidance into the lobe chosen. Such a catheter was made for me by Messrs. Down Bros. (See Fig.) It consists of an ordinary rubber catheter into the distal two inches of which is inserted a fine lead tube with a hole corresponding to the eye of the catheter. This is very malleable and is readily detected on the fluoroscopic screen. A slight bend at the tip facilitates introduction into the selected bronchus. The technique of introduction is the same. I have found no contraindication to its use in adults.



In children the method must be modified owing to the difficulties of indirect laryngoscopy and to the risks of local anaesthesia. It is generally easy to pass a catheter through the nose to the larynx and trachea, introduction being facilitated by extension of the head and flexion of the neck. If this route is chosen the lead-tipped catheter cannot be used.

Bronchography is rarely called for in children under the age of 5, but if it has to be carried out it is better to pass the catheter by direct laryngoscopy.

The positioning of the catheter and the oil injection are controlled by fluoroscopy: 5 to 10 c.cm. will delineate a lobe; 15 to 20 c.cm. is required to outline an entire lung. The position of the patient will vary with the lobe to be dealt with. The erect posture is the most suitable for the lower and middle lobes, and for the upper lobe the patient lies on the back with the opposite shoulder raised. To exclude cavitation of the lingula the anterior part of the upper lobe has to be filled, and the patient should be rolled slightly over on the face.

The film should be made immediately after the lobe has been filled, as even one cough may so spread the oil that definition of the bronchial tree is impaired. For this reason it is advisable to make the exposure on the screening stand. Some loss of accuracy results, but compensation is found in a higher percentage of successes. If coughing has been avoided the patient can then be taken to the usual photographic unit and a second exposure made. The catheter should be left *in situ* till all necessary films have been taken. The depth of exposure is of great importance. The standard exposure is too short to provide the necessary contrast, particularly if the lesion lies behind the cardiac shadow or below the dome of the diaphragm. Increase is obtained by doubling the penetration, and, if necessary, the time also. By this method lesions have been demonstrated which were not visible in plates taken with the usual exposure. Two weeks should elapse before a second bronchogram is taken, so as to allow the lipiodol to be eliminated.

Conclusions

Bronchography is not a substitute for bronchoscopy; it is an adjuvant.

In most cases bronchoscopy should precede bronchography, but in some patients it may be advantageous to reverse the order. In young or nervous subjects, for example, the manipulations of bronchography will prepare them for the more trying ordeal of bronchoscopy.

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CRATAEGUS OXYACANTHA IN HYPERTENSION

BY

JAMES D. P. GRAHAM, M.D.

(From the Institute of Physiology and the Medical Wards, Stobhill Hospital, attached to the Department of Materia Medica, University of Glasgow)

Crude extracts of hawthorn (*Crataegus oxyacantha*) have been used as a curative agent for cardiac disease, hypertension, and morbid conditions of the chest since the Middle Ages. The claims of the few who advocate the use of crataegus in such conditions have never been satisfactorily tested. The drug was introduced to medicine in Britain about 1880 by Green, a non-registered practitioner in Ireland. Subsequently it was adopted by the homoeopathic school and incorporated in their authoritative works (Assmann, 1930). In America, Jennings (1906) advocated the use of tincture of crataegus as an adjuvant to and even a substitute for digitalis in the treatment of cardiac disease, while Reilly (1910) recommended its use in cases of cardiac failure with arteriosclerosis and high blood pressure. In France it has long had a certain vogue, and Huchard (1903), Leclerc (1912), and Renon (1915) recommend the use of five minims of the tincture of hawthorn twice daily in order to keep the blood pressure of cases of hypertension within reasonable bounds.

Pharmacology

A series of investigations into the pharmacology of *Crataegus oxyacantha* was undertaken; they may be summarized as follows:

Tincture of crataegus causes sterile abscesses in guinea-pigs into which it is injected subcutaneously. Intravenous infusion of dilutions of the tincture from which the alcohol has been removed increases the gastric motility in anaesthetized guinea-pigs. The motor gradient of the isolated bowel of rabbits is reversed. In mammals intravenous infusion of similar dilutions of the tincture leads to slowing of the heart-beat, prolongation of the diastole with a tendency to idioventricular rhythm, and heart-block. The vagal centre in the medulla is stimulated, the early effects on the heart being inhibited by atropine. The isolated mammalian heart exhibits interference with the conducting system, while the avian heart reacts in a similar way to the mammalian heart. The coronary arteries of the sheep and rabbit and the pulmonary arteries and bronchi in the guinea-pig are constricted by crataegus. The carotid blood pressure of cats anaesthetized with 0.5 grain of nembutal per kilogramme of weight is profoundly depressed by 0.5 c.cm. of non-alcoholic tincture of crataegus per kilogramme of weight. This effect is unaltered by atropinization of the animal, and agrees with the findings of Martini (1932) on the blood pressure of dogs. Subcutaneous injection of tincture of crataegus has an antidiuretic effect on rats. The tincture is toxic to the liver of mammals if repeatedly administered subcutaneously, but does not induce morphological changes in the heart.

It is interesting to note the considerable similarities between the actions of tincture of crataegus and tincture of digitalis.

Pharmacy

A large volume of the tincture of *Crataegus oxyacantha* was made by macerating two kilogrammes of dry powdered whole fruits of hawthorn with 5 litres of 70 per cent. alcohol for seven days, with occasional stirrings, filtering, pressing the marc, and mixing the fluids.

This was assayed against international standard (1926) tincture of digitalis prepared from samples of leaf provided by the National Institute for Medical Research, Hampstead. Biological assay was carried out by the frog and the cat methods on tincture of crataegus from which the alcohol had been removed by maintaining a temperature of 50° C. until the volume was reduced to 20 per cent. of the original volume. The average result of these investigations was that tincture of crataegus has a potency of 14.5 per cent. of standard (1926) tincture of digitalis.

Therapeutics

With the knowledge obtained from the investigations into the pharmacology of *Crataegus oxyacantha* clinical trial of the efficacy of the tincture in cases of cardiac failure and cases of hypertension was begun. Tincture of crataegus is unpleasant to take in large quantities, but does not cause vomiting. It is rejected by the rectum even when given in considerable dilution.

Auricular Fibrillation and Cardiac Failure

In two cases of auricular fibrillation and two of mitral stenosis with orthopnoea, oedema, and tachycardia, massive dosage with tincture of crataegus was employed. Half an ounce of tincture of crataegus was administered six-hourly up to a total amount of twenty ounces in ten days. There was no improvement in the cardiac condition, and oedema advanced steadily. The drug was therefore abandoned as a competitor of digitalis, administration of which rapidly led to improvement in these same patients. The blood pressure of these cases was not affected by the treatment with crataegus.

Hypertension

A series of ten cases of men and women with high blood pressure was chosen. These were in part cases of arteriosclerosis of unknown origin, in part cases of chronic nephritis. All had old-standing hemiplegic lesions and several suffered from mild dementia. The blood pressure in the unaffected arm was recorded daily by the one observer using the same instrument. Only those cases which had been shown to have a stable blood pressure over several weeks were chosen for intensive investigation, and the blood pressure was registered daily for ten consecutive days to establish a basic or normal level for each case. Tincture of crataegus, 1 drachm three times daily in water, was then administered by mouth. The daily readings of the pressure were charted, and the drug was discontinued when it was felt that the pressure had been reduced enough. No ill effects were complained of by any of the patients as a result of this administration. In every case the systolic and diastolic pressure was reduced, often sharply, and returned to its former level some fourteen days after stopping medication. No other treatment was given, the patients being at rest in bed on a light diet. The results of the treatment with tincture of crataegus are summarized in the table and illustrated in the diagram.

Table showing the Effect of Tincture of Crataegus on the Blood Pressure in Ten Cases of Hypertension

Case No.	Age in yrs.	Diagnosis	Systolic B.P.		Diastolic B.P.		Time to Return to Initial Value (Days)
			Initial	During Crataegus Therapy	Initial	During Crataegus Therapy	
1	82	Cerebral haem.	190	150	105	90	10
2	71	„	195	150	115	80	14
3	84	Arterio-sclerosis	210	150	120	90	14
4	76	„	200	140	110	80	14
5	67	Cerebral thrombosis	200	150	100	85	12
6	65	Cerebral haem.	240	165	120	90	16
7	66	Chronic nephritis	200	175	115	100	10
8	63	„	215	160	150	90	17
9	75	„	195	110	110	70	6 (death)
10	68	„	200	150	70	55	14

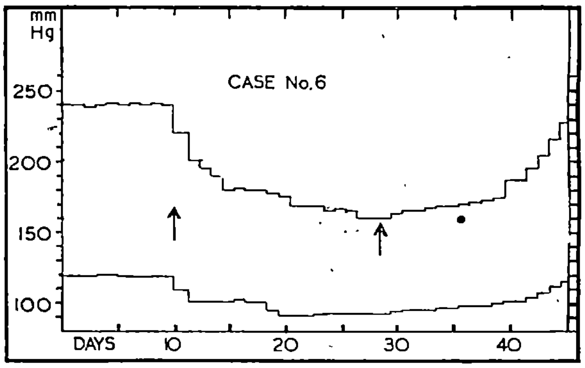

Diagram showing daily blood-pressure readings in a case of hypertension in a man, aged 65, with old-standing hemiplegia. Tincture of crataegus, half a drachm three times daily, was given during the period between arrows.

While the number of cases reviewed is small and the difficulties of adequate control in any investigation on hypertension are notorious, it is felt that a prima facie case has been made which justifies further investigation of tincture of crataegus as a depressor of the elevated blood pressure. In therapeutic doses digitalis produces slowing of the heart, promotes diuresis, and rapidly removes oedema of cardiac origin. The blood pressure in patients so treated is not affected, nor is it appreciably affected in cases of hypertension. Tincture of crataegus, on the other hand, has but little effect in slowing the heart rate, and diuresis is not induced by it. It, however, reduces elevated blood pressures, though large quantities may be taken with but little effect on the normal blood pressure. It is noteworthy that there is no sign of cumulative action, and that after cessation of the drug the blood pressure returns to its previous level.

Summary

The published work on *Crataegus oxyacantha* is briefly reviewed.

The pharmacology of crataegus is summarized and its resemblance in action to digitalis discussed.

The effect of tincture of crataegus in massive doses on cardiac failure, if there is any, is slight.

Ten cases of hypertension are reviewed and the result of treatment with 1 drachm of tincture of crataegus three times daily is shown to be that of a uniform lowering of the systolic and diastolic blood pressure.

This work was carried out with the aid of a grant from the Medical Research Council. Grateful acknowledgments are due to Professors E. P. Cathcart and N. Morris of the Departments of Physiology and Materia Medica for help and advice.

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Clinical Memoranda

Treatment of Pneumonia in Children with Sulphapyridine and Vaccines

Recent evidence (experimental, not clinical) indicates that in pneumonia treatment by sulphapyridine (M & B 693) is enhanced by vaccines, because it was found that the resulting antibodies were bactericidal while the drug was merely bacteriostatic (Maclean, Rogers, and Fleming, 1939; Fleming, 1939).

CLINICAL EVIDENCE

I now submit the clinical evidence of combined sulphapyridine and vaccine treatment in fifty-two cases of pneumonia (lobar and lobular) under Dr. F. C. Eve at the Victoria Children's Hospital, Hull, during the first half of this year. These were all children between the ages of 1 and 12 years. The results have been remarkably good, as indicated by the reduction of oxygen treatment almost to *nil*. In all cases the temperature fell within three days and remained down, except in the case of one patient to whom the full dose of sulphapyridine had not been given. Sequels arose in only two cases. In one there was an empyema in an infant aged 2 years, which was due to pneumococci only; this disappeared without operation after one small aspiration (clear, according to *x*-ray examination, after six weeks). In the other case spontaneous pneumothorax occurred twice in a child aged 4 years, with complete recovery.

The average stay in hospital of these fifty-two cases was ten days and there were no deaths, whereas in the corresponding six months of 1938 ten cases of pneumonia were treated, with one death and an average stay in hospital of 16.6 days. In 1937 eleven cases were treated, with one death and an average stay in hospital of 18 days. In 1937 and 1938 vaccine treatment alone was given.

Regardless of the age of the child Wynn's vaccine was given as follows: 1/3 c.cm. on the first day; 2/3 c.cm. on the second day; 1 c.cm. on the third day. Sulphapyridine was administered in the following doses, four-hourly, and was stopped after three days' absence of fever: ¼ tablet under 6 months; ½ tablet under 2 years; ¾ tablet under 5 years; 1 tablet under 12 years.

Clear cases of bronchitis were not thus treated, but in children it is often impossible to be sure of a diagnosis on admission, and it was felt safer to treat all cases thought to be of pneumonia rather than to wait and see. In this series there was no evidence of any harmful effects from sulphapyridine except in two cases in which mild vomiting occurred, which stopped on omission of the drug, and one mild rash, which also subsided quickly.

In conclusion, our impression of sulphapyridine used in combination with Wynn's vaccine is that (1) the pneumonia is shortened; (2) the drug is entirely harmless; (3) the death rate is probably reduced; (4) it is necessary to give full doses of sulphapyridine.

My thanks are due to Dr. F. C. Eve for suggesting the publication of these cases.

DEIRDRE M. LEWIS, M.B., Ch.B.,
House-physician, Victoria Hospital for Sick Children, Hull.

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A Wound of the Left Common Carotid Artery

The following case seems interesting enough to be placed on record.

An engineer aged 26 was admitted to the Willesden General Hospital on the afternoon of July 30, 1939, about twenty minutes after an accident sustained while at work. It is understood that a workmate, being of an inquiring disposition, had screwed up a boxful of phosphorus match heads in a vice, thereby producing an interesting explosion. The explosion, however, was considerably more violent than expected: a small piece of steel was projected some yards and struck the patient violently on the left side of the neck, causing him to fall unconscious. He soon recovered consciousness, and was given first-aid treatment and then removed to hospital. It is stated that there was profuse arterial bleeding.

CONDITION ON ADMISSION

On admission the patient was grey and shocked, and arterial blood was spurting from a small punctured wound over the left sterno-mastoid muscle at the level of the hyoid bone. The casualty officer, Mr. Campbell, suspected a wound of one of the major vessels, and while waiting for me applied a firm pad and bandage. When I saw the man a few minutes later he was complaining of a tight feeling in his neck and a difficulty in breathing. I removed the bandage and found that the external haemorrhage had ceased; but his symptoms continued, and it became obvious that the dyspnoea was due not to the tight bandage but to marked displacement of the larynx to the opposite side of the neck. The history and physical signs certainly suggested that the carotid artery had been punctured, and although it appeared that haemorrhage had ceased there remained a definite possibility that this might recur either when the blood pressure rose to normal or when some sudden movement was made. I concluded, therefore, that immediate exploration was the safest procedure.

OPERATION

One hour after admission operation was performed under gas-and-oxygen anaesthesia preceded by intravenous pentothal sodium. The skin edges of the wound were excised and the wound enlarged. An ill-defined track passing vertically through the sterno-mastoid muscle was visible and was very gently palpated for the presence of a metallic foreign body. The result of this manœuvre was a sudden and furious arterial haemorrhage, so severe as to indicate that either the common carotid artery or one of the main terminal branches was involved. Direct pressure through the sterno-mastoid by means of a gauze pad and two fingers gave complete control of bleeding, and while this control was kept up it was decided to try the effect of temporary ligation of the common carotid artery.

The wound was extended to the base of the neck, and the artery exposed and isolated with some difficulty owing to the presence of blood and clot both in the deeper planes of the neck and in the muscular belly of the sterno-mastoid muscle; occlusion of the vessel was accomplished and the pressure at the site of the haemorrhage was then released, with the result that haemorrhage restarted as furiously as ever. The wound was then extended up to the tip of the mastoid process, but dissection was greatly impeded owing to difficulty of access caused by the presence of the pressure pad and fingers of my assistant at the site of the original wound. Eventually this pressure had to be released while rapid dissection and swabbing enabled me to expose the bifurcation of the common carotid artery, which was the situation of the arterial wound. This was seized with a pair of artery forceps, and the common, external, and internal carotid arteries were ligatured. The wound was then closed with drainage and a blood transfusion was administered. This resulted in immediate improvement in the man's general condition, which had become rather poor towards the end of the operation.

No abnormal symptoms and signs were evident during convalescence except for a very severe occipital headache, which lasted from the fifth to the tenth day after operation, and the man was discharged from hospital on the fourteenth day.

COMMENTARY

The recurrence of severe haemorrhage at the time of operation, when only the very gentlest palpation was used, shows to what risks the man would have been subjected if a policy of wait and see had been conceived. My decision to operate, so amply justified in the end, was not taken without some hesitancy, as it seemed possible that direct pressure by a firm pad might have sufficed, although perhaps with the ultimate dangers of embolism and aneurysm. It is worthy of note, too, that at the time of operation quite gentle pressure through the sterno-mastoid against the transverse processes of the cervical spine was enough to control haemorrhage. It was also instructive to find that temporary occlusion of the common carotid artery was so completely ineffective in this case, the possible explanation being that the arterial anastomosis in young adults is very free. Temporary occlusion of the common carotid has been reported on as being very effective, so that the lack of control on this occasion was most disappointing and added greatly to our own difficulties and to the danger to the patient.

One has been taught that ligation of the common carotid artery is an operation particularly apt to be followed by hemiplegia. The hemiplegia is thought to be caused either by an immediate cerebral anaemia or by the effect of embolism. The latter hypothesis is said to be more probable because the onset of cerebral symptoms is often delayed until between the fifth and eighth days following operation, when, it is suggested, a portion of clot is washed up the internal carotid by back flow from the external carotid, the latent period having covered the establishment of an effective collateral circulation through the branches of the external carotid and the gradual extension of thrombosis from the site of ligation to the bifurcation of the common carotid.

In the case described this cycle of events obviously could not occur, as the three major vessels were ligated simultaneously, but it is interesting to note that the unexplained and severe occipital headache, while probably only a coincidence, did not become evident until the fifth day.

F. W. M. PRATT, M.S., F.R.C.S.,
Surgeon to the Willesden General Hospital.

Reviews

A FRENCH SYSTEM OF OPHTHALMOLOGY

Traité d'Ophtalmologie. Edited by P. Bailliart, C. Coutela, E. Redslob, and E. Velter. Volumes I and II. (Volume I, pp. 1,042; 755 figures; 7 plates. Volume II, pp. 1,144; 692 figures; 5 plates.) Paris: Masson et Cie. 1939.

French ophthalmology has a great tradition. During the eighteenth century it laid the basis of modern clinical practice, a brilliant galaxy of clinicians like Brisseau, de la Hire, Maître Jan, Saint-Yves, Daviel, and many others building solidly on the new anatomy and physiology that had developed in the seventeenth century following the break with Galen that the Renaissance had brought about. The dominating position of French ophthalmology can be seen from the fact that both the recognition of the nature of cataract as an opacity of the lens, and not as an effusion in front of it, and the radical treatment by extraction that is still practised to-day, were developed in France. In fact, a new pathology of ocular disease was created by this work, for it made untenable the fallacious theories concerning other lesions. In the succeeding century ophthalmology developed greatly in other centres, so that while French supremacy was no longer maintained the ophthalmology of France has always occupied an honoured and prominent position. The present system of ophthalmology, published under the auspices of the French Ophthalmological Society, is planned to run to eight volumes, and judging by the first two the effort is worthy of the great tradition behind it. The editors of the system have not confined themselves exclusively to French contributors, for a few of the hundred or so writers come from adjacent French-speaking countries like Belgium and Switzerland.

The first volume is devoted to the history of ophthalmology, the human and comparative anatomy of the eye and its adnexa, their embryology and teratology. There is also a chapter on heredity in ophthalmology. In the opening chapter, on the history of ophthalmology, Professor Villard covers this big field in a manner both concise and interesting; the information is up to date. The twelve chapters on the anatomical aspects of the eye and its adnexa cover eight hundred pages and constitute a really superb treatise, different aspects being dealt with authoritatively by different contributors. Special reference must be made to Dr. Rochon-Duvigneaud's comprehensive contribution to the comparative anatomy and physiology of the eye. This is a subject to which the author has contributed extensively, and his review leaves nothing to be desired in the way of completeness or clarity. The two concluding chapters, on heredity and teratology, by Professor Van Duyse, though excellent in themselves, do not quite maintain the high standard of the rest of this volume, for much recent work has been overlooked.

The second volume is devoted to the physiology and methods of examination of the eye. The fifteen chapters on physiology show the same modernity as the first volume—a not inconsiderable achievement in view of the rapidly changing character of this particular study. Thus in addition to the more established knowledge of physical and physiological optics there is the excellent account by Professor G. Leplat of the biological action of radiant energy on the eye. The twelve chapters on methods of examination cover fully the standard techniques and contain such newer developments as the measurement of the pressure in the retinal arteries and the photography of the eye. It would be a thankless and futile task to point out minor omissions in a work of this character. It is more gratifying to see a book of this type worthily produced—a feature in which French publications are sometimes apt to fail.

SURGICAL PATHOLOGY OF THE SPLEEN

Pathologie Chirurgicale de la Rate: By Pierre Goinard. (Pp. 174; 4 figures; 11 plates. 55 francs.) Paris: Masson et Cie. 1939.

In 1867 Péan, under the mistaken impression that he was operating for an ovarian cyst, successfully removed a cystic spleen. The author of this monograph tells us that this was the first authentic successful splenectomy, since when it was realized that an apparently normal life could be lived without the spleen. Various operations such as splenopexy and splenorrhaphy have been performed, but to-day the surgery of the spleen may be said to be almost synonymous with splenectomy. Splenectomy has contributed largely to our knowledge of the morbid anatomy of the spleen, and Goinard believes that we have now reached a stage at which stocktaking is desirable and the results of and indications for splenectomy can be set forth. Too many splenectomies have been performed and are still being practised. In a well-arranged and attractive volume, printed in large clear type which is easily read and appropriately illustrated, the author summarizes present knowledge of those diseases of the spleen which have some surgical bearing. As an indication of the lesions considered we may refer to ptosis and torsion of the splenic pedicle, contusions and rupture, wounds and hernia, abscess, tumours, cysts, the various forms of splenomegaly, particularly those encountered in the Tropics and especially the Algerian enlargement, on which the author of this volume may be said to be an acknowledged authority, and the spleen in blood diseases such as acholuric jaundice and purpura haemorrhagica.

The greater part of the book will be of interest to the surgeon: distinctions between Gaucher's and Pick-Niemann disease are perhaps of more interest to physicians or pathologists, but their inclusion serves to make this monograph more complete. The penultimate chapter deals with surgical technique, while the final chapter briefly summarizes the conclusions of the review. With the introduction of radiotherapy for splenomegalic leukaemia, liver therapy for pernicious anaemia, and chemotherapy for kala-azar, and with our wider knowledge of what may be expected from splenectomy, the operation is nowadays less often indicated, and except for purely surgical lesions such as injuries should only be considered after careful discussion between physician and surgeon. In our opinion this monograph would be an admirable aid to such discussion.

UNCONSCIOUS CAUSES OF WAR

War and Peace. Essays in Psychological Analysis. By William Brown, M.D. (Pp. 93. 5s. net.) London: A. and C. Black. 1939.

Dr. William Brown's short book on *War and Peace* consists of lectures given at Oxford and some reprinted letters to the *Times*. The substance of them will be already familiar to those who have read his other books, but the language is simpler and less technical, as is necessary if the contents are to have a general appeal. It is perhaps in some respects already out of date because last April war did not appear to him or to many others as inevitable in the near future, and his arguments are partly based on that belief, while convinced that the latest war would not be the last. As is well known, he had wide experience during the last war of the psychology of the soldier both in the field and in hospital, which gives him an advantage over the arm-chair theorist. Here he applies the results of an analysis of the general primitive tendencies of self-preservation and aggressiveness in the individual to the like tendencies in the State. His conclusions are not very different from those reached by Dr. Edward Glover in his book *War, Sadism and Pacificism,* and both authors agree that the leaders of a nation should be aware of the mental forces at work below the surface. Starting with the postulate that war and even rumours of war release emotional and irrational forces which make for more primitive methods of thought, he shows, as Wilfred Trotter did in his small masterpiece *The Instincts of the Herd,* that under those conditions the people become highly dependent upon a leader and, forsaking all others, can only hear his voice. This of course is much more marked in a totalitarian than in a democratic State, which gives an initial advantage to the former as long as the leader can show results. Dr. William Brown goes on to point out in an interesting manner that under such conditions the Freudian super-ego of the individual is for the time being virtually transferred to the leader. We are familiar with the type of mind that is happiest when it can cast all responsibility on to someone else.

It is inevitable that the author's analysis of the unconscious causes of war is more convincing than his constructive policy of peace. His amusing comments on the pugnacity of pacifists helps to explain that. The book finishes appropriately enough with an appendix on paranoia! One is left with a sensation of the near presence of that grim ἀνάγκη of Greek tragedy and Hardy's *Dynasts,* "of the working of fundamental parts of the mind not under the full control of the conscious personality." Plautus might say, "In wondrous ways the gods make sport with men," but it is for us to learn where the blame should really be laid.

PATHOGENESIS OF PERIDIVERTICULITIS

Acta Pathologica et Microbiologica Scandinavica. Contribution to the Pathological Anatomy of the Complications following "Diverticulosis Coli"—with Special Regard to the Pathogenesis of "Peridiverticulitis." By Dr. Hans Thomsen. Volume XVI, fasc. 3. (Pp. 215–345; illustrated. 1 volume (generally 4 numbers) 35 Danish crowns.) Copenhagen: Einar Munksgaard. 1939.

Dr. Hans Thomsen of Juelsminde, Denmark, published in 1934 a brochure on the symptoms and clinical recognition of inflammation in the region of diverticula of the colon. In his contribution to the pathological anatomy of the complications of diverticulosis coli he distinguishes from the chronic adhesive perisigmoiditis the forms which are due to local abscess formation in the intestinal wall or mesentery occurring as inflammatory tumours or stenoses. L. B. Wilson, who first drew attention to the subject, regarded such inflammation that occurred in the fatty connective tissue surrounding the diverticulum without traceable alterations of the diverticular wall itself as due to diffusion of bacteria and their metabolic products through the wall. This explanation appears to have been accepted by other pathologists without comment, but Thomsen, in the study of six cases, sets out a different explanation which appears more natural and probable than that stated by Wilson. By careful serial section he found that the contents of these tiny abscesses were not only polymorphonuclear leucocytes, round cells, eosinophils, and blood, but fairly numerous giant cells were found at the edges, and in several places foreign bodies in the shape of long, somewhat twined threads of cellulose. The only explanation of this picture, in which acute and chronic processes are found, can be that these multiple foreign bodies have gradually perforated the thin walls of the diverticula and thus made their way outside the lumen of the bowel; here the organism has then tried to encyst them. In some instances the reparative processes may be so strong as to enclose the foreign body in an abundant new formation of connective tissue, or a single abscess round a foreign body may perhaps perforate to the intestinal lumen and so be evacuated.

Using the analogy of the giant cells found in anal fistulae, now recognized as giant cells of foreign bodies, Thomsen offers this explanation of the pathogenesis of the inflammatory tumours found with diverticulosis. There is thus a close relationship between the inflammatory tumour or peridiverticulitis and perforation of diverticula leading either to peritonitis or to fistula into bladder or to the surface skin. The demonstration of the causative foreign bodies—splinters of vegetable cellulose—is a laborious job involving cutting serial sections of strips of the bowel wall. The author points out that the tissue must be specially hardened to bring the viscus to a state of firmness about equal to that of the foreign bodies, otherwise the sections merely present a torn appearance and make the recognition of the foreign bodies, which are sometimes not very numerous, almost impossible. Dr. Thomsen's studies open up a new and interesting field in intestinal pathology.

PHYSICAL TRAINING FOR WOMEN

Sport, Physical Training and Womanhood. By Stephan K. Westmann, M.D., L.R.C.S., L.R.C.P., L.R.F.P.S. With a foreword by Sir Kaye Le Fleming, M.D. (Pp. 222; 73 figures. 12s. 6d.) London: Baillière, Tindall and Cox. 1939.

Formerly obstetrician and lecturer in the Berlin Postgraduate School, and holding the diploma of medical officer of sport, Dr. Westmann has experience on which to base his opinions. His thesis that the whole female organism takes its cue from the gradual rise and fall of uterine contractions is perhaps rather tenuous for the weight of deduction it is asked to support. If sudden overstrained muscular activity is disastrous for the female body, can it be argued that it is any more advantageous to the male? To envisage physical training for women solely as training for child-bearing is perhaps to narrow the issue too much; but there is great value in pointing out how wrong it is to make it merely a poor imitation of that suitable for men. This teaching is emphasized again in Sir Kaye Le Fleming's foreword.

Dr. Westmann begins by inveighing against competitive sport for women. If statistics are confessedly scanty, and deductions are influenced by personal conviction, the possible bad effects of professional or excessive athletics upon the pelvis, and upon the admired type of woman, are made clear. The different kinds of physical exercise, including games, are described at length, with interesting comments. Reference is also made to the effect of manual labour in industry. The anatomical and physiological considerations as reviewed are useful, provocative, and corrective to much current practice in physical training. There are sentences, however, of surprising inaccuracy. As the premier exercise suitable for women Dr. Westmann chooses swimming, but objects to diving. He fears the sudden shock of cold water; and jumping in any form seems to be anathema to him. There are unpleasing photographs of women athletes, and attractive ones of women training for the tremendous muscular effort of confinement, and doing restorative exercises graduated from the second day of the puerperium.

The aims of physical culture are set forth in a lively last chapter, from the Greeks to Botticelli and the Olympic Games of modern Europe. Dr. Westmann looks upon exercises as "a form of provocative therapy," and part of every doctor's equipment. He insists that there is an increasing number of women with small pelves, partly due to our down-grade civilization, so that it is doubly foolish to allow faulty training to develop the masculine type of woman, the dreaded virago. Moderation in all things is the penultimate word; the final is, "Woman does not merely become Mother; rather, to this end she was born."

Certain statistics in process of collection by the National Physical Fitness Council, and experiences of women athletes, weigh in against the alarmist attitude of Dr. Westmann. But no warning about the danger of competitive sport and excessive training can be disregarded, while positive teaching on the theory and right application of the various forms of physical training for women is very welcome.

Notes on Books

The Art of Mothercraft, Part II, by Dr. Leslie Housden, is subtitled "The Study of Detail," and serves to apply the general principles laid down in the first volume of the series. The author writes attractively and accurately and, above all, with sound common sense. Parents and others interested in the care of the young will find it of much value. The section on bottle-feeding is rather inadequate, but this may be a deliberate effort to support the author's well-known enthusiasm for breast-feeding. The book is published at 1s. 6d. by the National Association of Maternity and Child Welfare Centres.

The fifth volume of *Traité de Biocolloïdologie*, by Dr. W. Kopaczewski, is entitled "The Colloid State and Medicine." Half the volume deals with the blood and the remainder with tissue fluids, sweat, urine, and the body tissues. There is an abundance of tabulated material (255 tables), and in particular the author has collected data showing the chemical composition of fluids in different species. The chapter on the physical characteristics of the blood is noteworthy because the author has done much original work on this subject. The volume contains a large mass of information, and constitutes a very useful work of reference to the chemical and physical properties of the body fluids and tissues. It is published in Paris by Gautier-Villars at 100 fr.

Professor W. Catel, with the help of seven collaborators, has produced a massive textbook on the nursing of healthy and sick children, *Die Pflege des gesunden und kranken Kindes, zugleich ein Lehrbuch der Ausbildung zur Säuglingspflegerin und Kinderkrankenschwester* (Leipzig: Georg Thieme). It is intended primarily for the nurse who is specializing in the nursing of children, but it is also intended to be of service to medical students and practitioners and to be a work of reference for mothers or students of mothercraft. It is a comprehensive work, containing long sections on normal function and structure, legal aspects, eugenic considerations, and racial matters, occupying nearly one-third of the book, before the actual details of nursing, management, and treatment of the healthy child are discussed. The remainder, just under half of the whole, is devoted to the care of the child in sickness. Concluding chapters deal with questions of diet, drug therapy, disinfection, physiotherapy, and with the prevention of accidents. Over four hundred illustrations help to make plain matters of importance, and for the most part are well reproduced. Coloured plates of certain rashes are most successfully used. The book as a whole is well planned and the details appear to be well executed. Great care has been taken with sections, such as that on the occupation of the child (games, toys, and so forth), in which most children's nurses lack specific instruction.

Surface Anatomy, by Dr. W. E. ROBERTS of Sydney, Australia (Angus and Robertson, 7s. 6d.), consists of a series of plates which have been made from photograghs of the living model. The position of the underlying structures is clearly indicated on the surface, and the captions are arranged so that they appear either on the same page as the figure or opposite to it, and it is thus unnecessary to turn over pages in order to compare text with illustrations. The legends are patterns of brevity, pertinence, and exactitude, and the only criticism we feel tempted to make is of the likelihood of an impression being conveyed of an absolute constancy in position of the organs depicted beneath the surface, which is not warranted by the findings of recent researches on normal individuals by means of *x*-ray examinations. The relative positions of certain organs are, as is well known, altered by posture, and vary with the type-form of the individual age, and the distension or contraction of certain viscera during physiological action such as occurs during respiration, ingestion of food, or with the distension of the bladder and the loss of tonicity of the muscles of the abdominal wall. A few notes and radiographs indicating the extent and direction of some of these variations, while not greatly increasing the size of the book, would add much to its practical utility and surgical interest.

Preparations and Appliances

THE VEIN-SEEKER

A Simple Instrument for Entering Collapsed Veins

Mr. F. RONALD EDWARDS, M.D., Ch.M., F.R.C.S., writes from the Department of Surgery, University of Liverpool:

Experience with the use of bottles of stored blood, with their coincident delivery apparatuses, has shown that the entering of a collapsed vein in a shocked patient with a needle attached to a tube full of blood is on many occasions no simple matter. Numerous methods have been devised to overcome this difficulty, and of these the following are the most frequently used:

1. The needle may be removed from the end of the tube and attached to a Record syringe. When the vein has been found the syringe is removed and the tube reattached. This method is "messy," and with the manipuations to fix the tube back in position the needle may be pushed out of the vein or through its opposite wall.

2. The vein may be exposed and a cannula inserted. This method, although reliable, is time-consuming, and leads to the loss of that vein for any further intravenous work.

3. A Kaufmann's syringe may be attached to the end of the delivery tube, and this utilized for finding the vein. This is a very excellent method, but the syringe is rather expensive and easily broken. Under war-time conditions, where a large number of transfusions may be proceeding at the same time, hospitals may run short of a supply of these.

The following instrument, or "vein-seeker," is simple and cheap and any hospital may have an adequate supply by the expenditure of a few shillings.

The "vein-seeker" serves two purposes; first, it helps to find and enter a difficult vein, and, secondly, it in effect brings that vein upon the surface. It consists of four pieces: (1) A stainless steel needle of fine serum size cut down to 2.5 cm. length. (2) A piece of good-quality rubber tubing 3.5 cm. long and of 4 mm. bore. (3) A piece of glass tubing with flanged ends 4 cm. long and of 4 mm. bore. (4) A rubber teat which is slipped on the glass tubing over a second piece of rubber tubing a quarter of an inch long.

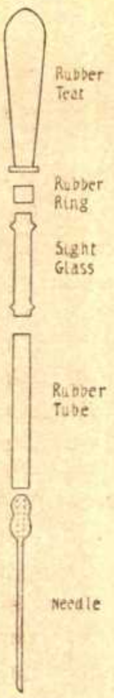

FIG. 1

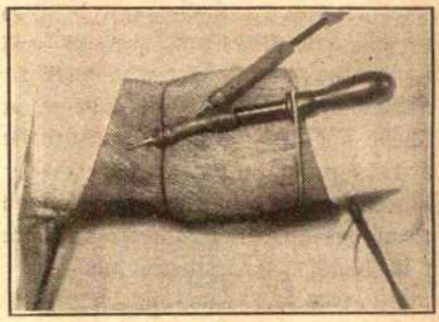

FIG. 2.

The dissected instrument is shown in Fig. 1. Fig. 2 shows the apparatus in use.

METHOD OF USE

The whole is filled with 3.8 per cent. sodium citrate solution, and the instrument held with the hand in the supinated position. The length of the instrument from the butt of the needle to the teat is four inches, and this allows the butt of the needle to be held between the index and thumb, and the teat to be compressed by the fourth and fifth fingers against the hypothenar eminence.

The teat is now compressed to empty it of citrate solution, but leaving the rest of the instrument filled. The point of the needle is inserted under the skin where the vein is suspected to be, and the pressure on the teat released. The teat remains collapsed, for air will not enter the instrument owing to the point of the needle being buried in the subcuticular tissue. The vein is now sought with the point of the needle, and as soon as it is entered the negative pressure caused by the collapsed bulb will draw blood up into the instrument, and it can be seen in the glass tube. The whole is then fixed in position by two rubber bands (which are conveniently placed beforehand on the arm, one above and one below the elbow-joint) or by two pieces of thin strapping.

The needle leading from the bottle of blood is then inserted through the rubber tubing of the seeker and the transfusion proceeds. The flexible tube in the hollow of the elbow bends if the elbow is moved and the needle does not jump out of the vein. A second safety joint is also provided where the main needle from the bottle enters the rubber tube of the seeker. The transfusion may now be safely left, and if the patient is in any way restless a splint can be fixed to the back of the arm. Thus a number of transfusions can be carried out by one person at the same time.

If a second bottle of blood is necessary for the patient this can be put into circuit by pushing the delivery needle of this second bottle into the seeker's rubber tube. Saline or gum acacia saline can similarly be given after the transfusion by the same method. The rubber tube of the seeker thus acts as an external vein and can be used time and time again. An intravenous anaesthetic or a cardiac stimulant can be given by puncturing the rubber tube with the needle of the syringe. If for any reason the needle of the seeker becomes blocked, it can be cleared by pushing a stylet through the rubber tubing and down the needle without in any way disconnecting the apparatus.

This instrument is now standardized for use in the Merseyside War Blood Bank and is distributed with each delivery apparatus. It has been made by and is obtainable from Messrs. Evans Sons Lescher and Webb, 56, Hanover Street, Liverpool, 1.

BRITISH MEDICAL JOURNAL

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ANAESTHESIA IN WAR TIME

Organization of medical activity on a war-time basis has led to the ventilation of many problems, among them those with which anaesthetists are particularly concerned. In our correspondence columns there have been revealed surprising differences of opinion as to the best and safest methods to employ in order to ensure adequate anaesthetic services to the community. To the many practitioners who have a good working knowledge of the simple methods of anaesthesia but who have not had the opportunity to become familiar with the more modern anaesthetic agents and techniques it may well appear that much of the recent comment has obscured rather than clarified the problems in hand. Anaesthesia has seen great changes during the past few years, and the present situation has naturally become an opportunity for the airing of personal opinions upon the question of the most expedient type of anaesthesia. Individual anaesthetists have advocated their own favourite methods and have seen the chance of introducing these to wider use. Such publicity has its value in revealing developments in technique, but the wind of enthusiasm must be tempered. In some cases there has been an ill-founded prejudice for one or other method, and enough stress has not been laid on the necessity for due appreciation of the simple methods of anaesthesia. The advances that have been made have in no way diminished the importance of these methods, especially during war.

Anaesthesia will be conducted under a wider diversity of conditions during a war than in times of peace. In many of the base hospitals it will be possible to use modern equipment and the refinements of anaesthetic technique which have been developed in civilian life. The bulk of the anaesthetic work in these hospitals will be done by the specialist anaesthetist. In the less well equipped hospitals simplicity of technique will be all-important. In addition, many of the anaesthetists will be practitioners without a wide experience of anaesthesia and be suddenly called upon to do work of a scope far beyond their peace-time duties. It is essential that such men should employ methods with which they are familiar. The result of much of the recent correspondence will be to set many a conscientious practitioner wondering if he is rendering adequate service by using the methods he knows well. He can rest assured on this point. Although it is undoubtedly true that more recent anaesthetic agents and techniques have made induction of and recovery from anaesthesia more pleasant and have helped to reduce post-operative complications, ether is probably still the safest anaesthetic available. Open-drop ether might well be regarded as the standard method of anaesthesia, and competence in the administration of ether is of far more practical value than a smattering of experience of up-to-date agents. There is, however, one technique with which the practitioner should become familiar—that of endotracheal intubation. He should become familiar with the use of a laryngoscope. For cranial surgery and for plastic operations on the face and the neck endotracheal anaesthesia is essential, and for upper abdominal surgery it facilitates the maintenance of smooth uneventful anaesthesia.

It is reassuring to know that unlimited supplies of ether, ethyl chloride, and chloroform will continue to be available. With regard to drugs imported from foreign countries present stocks are estimated to be adequate for at least one year ; there may not be so wide a choice of drugs in certain groups, but in time of war individual fads and fancies are of little consequence. There need be no fear that anaesthetic services will suffer from lack of indispensable supplies. Nitrous oxide and oxygen will continue to be available in unlimited amounts. It is essential, however, that containers for these gases should circulate freely, since a shortage of containers is the only factor which might lead to any difficulty in maintaining supplies. Hospitals should therefore refrain from storing more cylinders than are necessary for normal requirements. It is advisable for stocks of nitrous oxide and oxygen for current use to be stored as far away as possible from the vital centres of a hospital, since any direct hit from a projectile in the immediate vicinity of the cylinders would result in a violent explosion.

The controversial subject of chloroform is being revived once more. Although the portability, potency, and non-explosiveness of chloroform might appear to justify its employment under emergency conditions, this drug suffers from one serious drawback. No matter how skilled an anaesthetist may be, his experience will not suffice to prevent the occasional fatality of primary cardiac failure from the action of chloroform. For this reason alone chloroform and mixtures of chloroform and ether are nowadays looked upon with disfavour by most anaesthetists in this country. We may quote three contributors to the anaesthetic series recently published in this *Journal.* Dr. C. Langton Hewer wrote, "Chloroform is an extremely toxic drug, and can cause grave metabolic changes." Dr. J. Blomfield observed that chloroform has been proved "to be potentially too dangerous for a routine anaesthetic." And the feelings of many were summed up by Dr. Helen Lukis in these words, "If only chloroform were safe it would be the ideal anaesthetic for general practice." The detached observer cannot deny that ether is able to achieve all that chloroform can achieve and with an infinitely higher degree of safety. The demerits of chloroform in relation to ether must be carefully weighed by those who still advocate the use of the former.

The problem of the shocked patient is of special importance in time of war. Where possible, restorative measures should be instituted before proceeding to extensive surgery, but in many cases anaesthesia will be needed before the shock has been overcome. Chloroform is in any case unsuitable for the shocked patient. Spinal anaesthesia is contraindicated on account of the fall in blood pressure which often accompanies it. The intravenous barbiturates, pentothal and evipan, depress the respiratory centre more markedly than do inhalational agents, and also tend to cause a fall in blood pressure. Nitrous oxide and oxygen anaesthesia, or very light ether anaesthesia, is satisfactory, and light cyclopropane anaesthesia is also suitable for the shocked patient. Cyclopropane is likely to be confined to the specialist anaesthetist; some type of closed-circuit (CO_2-absorption) apparatus is necessary in administration of this agent. It is most important to remember that any shocked patient requires much less anaesthetic to achieve a given depth of anaesthesia than he would if he were in normal health. Practical application of this fact will solve most of the difficulties of anaesthesia in shock.

VIRUSES AND CANCER

Speculation is an exercise for which there is no more fruitful field in the whole of pathology than that of virus diseases. The filterable virus itself is something which leaves a good deal of scope for the imagination; its presence and its properties can often be deduced only by indirect methods difficult of application and of no more than approximate accuracy. Although there is much which remains uncertain about viruses as a whole, including even their essential nature, they become problematic in the highest degree when they are considered as causes of cancer. Nevertheless, in spite of numerous difficulties and of gaps in the facts of the argument which can only be bridged by analogy or conjecture, a hypothesis has been built up which regards malignant disease as due directly to the presence of a virus and relegates all other known causes —notably various well-authenticated carcinogenic " irritants "—to the position of merely predisposing agents. One of the leading advocates of this bold and far-reaching idea is Dr. C. H. Andrewes, whose presidential address to the Section of Comparative Medicine of the Royal Society of Medicine (see p. 969) deals with what is perhaps its most difficult aspect. The general virus hypothesis of cancer makes it necessary to assume that the virus is latent in the body, presumably for a long period and possibly throughout life, until its cancer-producing power is set free by some other, possibly chemical, stimulus. It is therefore appropriate to inquire whether other and less hypothetical viruses are known to behave similarly. A full answer to this question is given in the first part of Dr. Andrewes's address. There are indeed many viruses which behave somewhat similarly. The viruses of influenza and poliomyelitis can infect and immunize without producing manifest disease; those of poliomyelitis, fowl-pox, and possibly others persist in the body after recovery from an attack. Still more apposite is the behaviour of two viruses in a third category, since, like the hypothetical cancer virus, they remain latent in the body without inducing full immunity. The first, the virus of herpes simplex, commonly exists in the mouth; occasionally, as was pointed out by Dr. G. M. Findlay at last week's meeting, it exists in other parts of the body; and attacks the tissues only when their resistance is diminished by other causes. The second, virus iii, is believed to be exclusively latent under natural conditions, and can only be brought into activity by successive injections of tissue suspension from one rabbit to another. That viruses can remain latent for long periods is unquestionable; on the other hand, latency is most often seen in the immune individual, and there is certainly no known example of it in which, so far from immunizing, terminates in a steadily progressive infection.

No observations made in recent years have had a more startling effect in the field of cancer research than those of Bittner, which can be used as another item in this argument. Susceptibility to cancer of the mamma in mice, previously thought to be an inborn character, must now be regarded as due to something transmitted from mother to offspring after birth. Of the three things which, according to Bittner himself, this something may be, a virus is certainly the most credible, and most people will share Dr. Andrewes's difficulty in " swallowing a hormone which when taken in infancy will condemn your grandchildren to the development of cancer in their years of maturity." But in spite of suggestive collateral evidence, of which this is an example, it is difficult to get over the solid fact that the presence of a virus cannot be demonstrated in malignant mammalian tumours, whether naturally occurring or chemically induced—at least by those direct methods which serve to demonstrate its presence in tumours of birds. For this formidable difficulty Dr. Andrewes suggests a new explanation, which is both ingenious in conception and picturesque in his elaboration of it. The idea of a " toothless " virus, so happily established in the cells of one individual that it loses its capacity to bite those of another, will serve as a hypothesis until facts are forthcoming either to support or to condemn it. It may be observed in passing that among bacteria enhanced pathogenic activity in one host is usually accompanied by an increase in capacity to attack others and not a diminution, but the metabolic habits of bacteria and viruses are so different that this comparison may be invalid.

It is not easy to see how the present methods of approach are going to carry this problem much further. Hitherto the study of viruses has proceeded mainly on lines which were first found useful in dealing with bacteria, and where all others have failed the serological method has had to be relied on to yield results unattainable by other means. Any doubts of the specificity of some of the immune reactions observed would seriously imperil the conclusions which have been drawn from existing data. Can the study of this subject only be pursued by adapting to it the methods of bacteriology? Just as viruses differ fundamentally from bacteria, so perhaps do the most instructive methods of studying them. It is difficult to escape the feeling that something is lacking in this obscure subject, and that more of the concrete and less of the abstract and conjectural will only be produced by some altogether new line of attack. That the virus hypothesis of cancer in general is unsatisfying to some minds is due both to this essential uncertainty. and to the number of questions which in its present form it leaves without an answer. Let us consider a few of these. Is the cancer virus omnipresent in the human race, or, if not, how and when does the individual acquire it? What is its distribution in the body, and does this vary? Does it ever act in man as the sole cause of malignant disease, or is there always a predisposing cause in addition? Does the body ever develop an immunity to it, and is there one such virus or are there many? Until such questions as these can be answered this hypothesis can have no force or practical interest, and they are not likely to be answered until a means is found of bringing the ordinary run of mammalian cancers within the scope of study from the virus standpoint.

THE STREPTOCOCCI OF SCARLET FEVER

Ever since Sydenham's classical description of scarlet fever it has been recognized as one of the chief causes of morbidity among children and young adults. For decades various devices of administrative control have been directed towards limiting its spread. Innumerable workers in the laboratory and in the field have spent their energy in trying to find effective means of combating the infection. Local authorities have spent vast sums in providing isolation for those with recognizable symptoms of the malady, hoping thereby to protect the public at large. The bacteriologist has been hard on the trail of "the" causative organism. The results to date of these various campaigns can be summed up briefly. Administrative control has failed to accomplish its avowed object, for it is seldom that a case or even a group of cases can be traced to the source. There is no specific remedy, though modification of severe types can be effected. Hospitalization, except for treatment of complications and sequels in individual cases, is futile, for there are always more carriers and potential sources of infection outside the isolation wards than could ever be contained within them. Recent research tends to show that not one sort, but several groups, of streptococci can cause the disease, and what determines pathogenicity is unknown. On the other hand, scarlet fever is not the deadly disease it used to be, nor is it so highly contagious; but can we take credit for this? Scarlet fever is but one of the several manifestations of invasion of the body by certain haemolytic streptococci, and if it is studied from that aspect only solution of the problem will be hard to come by. Would it not be logical, on the analogy of that multiform infection tuberculosis, to group together the different forms of streptococcal invasion under a comprehensive title, "haemostreptosis" (to coin an ugly but expressive word), and study the disease from a point giving a wider view? Already a good beginning has been made in sorting out from the immense genus of streptococci those species that possess haemolytic properties and again dividing them into recognizable groups with marked characteristics. A further step in systematic study is to "locate" them —to find their usual habitat and the circumstances that condition their pathogenic activities. Two pieces of work in this connexion have been recently recorded.[1] In one the precipitin tests have been used with some effect to identify different groups and to distinguish between healthy carriers of non-pathogenic streptococci and carriers of potentially pathogenic varieties. In the other, classification was determined by toxin-antitoxin tests on the white rabbit with a view to discovering the characteristic virulence of certain groups, the types of streptococci prevalent in schools during epidemic periods, and the relation between the haemolytic streptococci found in healthy school children and those found in scarlet fever patients. These researches are but trial borings on the face of the rock, but they show that there is a mine of knowledge waiting to be opened up.

DURATION OF PREGNANCY

Variations in the period of gestation in man are of more than academic interest. Premature delivery has long been recognized as an important cause of neo-natal mortality and morbidity, and there are many who believe that post-maturity is also associated with an increased risk to the foetus. Hauptstein and M. Stockert[2] have investigated a series of cases to determine how far the duration of pregnancy might be influenced by extrinsic factors. They compared results from three distinct periods—the pre-war (1905–13), the war and inflation period (1915–23), and the post-war period (1929–37). All cases were excluded in which (*a*) the first day of the last menstruation was not known for certain; (*b*) the menstrual cycle was not regular and of the twenty-eight-day type; (*c*) labour did not begin and terminate spontaneously; and (*d*) the pregnancy was complicated by a chronic illness. The analyses revealed that there was no difference in the average length of gestation in the three groups, which was 281 to 282 days. One curious observation was that when delivery occurred between January and March the average duration of pregnancy was increased to 283 to 284 days. A similar slight increase was also observed in primiparae. The constant average figure obtained in spite of variations in the social and economic circumstances of the mother can be understood when it is remembered that the German observers carefully excluded all patients whose menstrual cycles were not of the twenty-eight-day type. The evidence submitted by Ogino, Knaus, and others that ovulation occurs approximately a fortnight before the onset of menstruation, irrespective of the length of the cycle, is now widely accepted. If it is admitted that the life of the human ovum after ovulation is only a few hours, and the life of the sperm in the maternal passages only a few days, it follows that the date of delivery as estimated from the first day of menstruation may be considerably in error if the patient has irregular periods or a prolonged intermenstrual phase. For example, with a six-weeks cycle the calculated date of delivery would be approximately a fortnight too early, and in such a case there is an obvious chance of regarding the full-term foetus as being two weeks post-mature. An unusual case, and one which cannot be explained on this basis, was recorded in the *Journal* of June 3 this year (p. 1155) by G. F. Walker. Intercourse took place on three occasions on consecutive days, the first of these on the day following cessation of menstruation. On the third day the husband was accidentally killed, and 315 days later a healthy male child was delivered. Questions of compensation raised a medico-legal problem, and as the chastity of the mother was not doubted the court entered judgment for the child, thus giving legal recognition to a pregnancy of 320 days as calculated from the first day of the last period. In the case of Clark *v.* Clark, recorded in the medico-legal columns of this *Journal* on March 25 of this year (p. 647), the point in dispute was the shortness of the gestation period. The husband alleged adultery by his wife on the grounds that she had given birth to a living female infant 174 days after the earliest possible date on which he could have been responsible. When evidence was produced that labour began after a severe fall and that the infant was markedly premature the president of the court ruled in the wife's favour. It would appear, therefore, that although, as Hauptstein and Stockert have shown, the average duration of pregnancy is 281 to 282 days, a wide possible margin must be allowed for both prematurity and post-maturity.

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[1] *Amer. J. Hyg.*, 1939, **29**, Section B, 97 and 107.

[2] *Dtsch. med. Wschr.*, 1939, **65**, 630.

GASTRO-INTESTINAL DYSFUNCTION

Struck by the number of patients referred for *x*-ray examination of the stomach, gall-bladder, and intestinal tract in whom the most painstaking examinations fail to reveal any sort of organic disease and, further, who apparently respond poorly to treatment, Dr. Barton A. Rhinehart, a radiologist working in Arkansas, has been led to compile an extensive review of his own experiences and of the available literature.[1] Of the large number of dyspeptic patients about one-third have no organic disease, and of the remaining two-thirds many have functional disturbance combined with organic disease. The symptoms of functional disorder are distension, discomfort, diffuse irregular or shifting pains, and constipation, all evidence of neuromuscular disturbance; but these abdominal symptoms may be accompanied and at times overshadowed by general, cardiovascular, and nervous symptoms. The likely causes of neuromuscular imbalance are examined—constipation and increased irritability of the alimentary canal are examples—and found to be allergy, food deficiency, and vitamin lack, especially deficiencies in calcium and vitamin D. The author believes that the element of subconscious mental effect in these disorders is secondary to the real cause—nutritional deficiency. Abnormal motor function is more often a cause of distress than errors of secretion; increased activity of the colonic muscles results in constipation and not, as might be supposed, in diarrhoea. Spasms of the anal sphincter and passage of dry and scybalous stools are the most dependable signs of true constipation. Careful attention should be paid to complete history and to physical and *x*-ray examinations to exclude organic disease. Treatment must achieve three purposes: elimination of irritating factors, whether environmental, psychic, or gastro-intestinal; correction of all deficiencies, especially of calcium and vitamin D; and the specific treatment of complications. Rhinehart's experience is that removal of appendix or gall-bladder is unavailing unless the deficiency state is adequately treated. Cases are reported showing symptoms of the conditions, but results of treatment on the lines suggested are not included. The author has developed his thesis before local medical societies, and now appeals to a wider audience for criticism and support of a method of treatment for this numerous company of sufferers.

LAMBLIASIS

In 1681 Antonj van Leeuwenhoek of Delft, who was suffering from a chronic entero-colitis, observed numerous parasites of microscopical size in his stools, but he did not attach any pathological significance to his discovery. The same organisms were recovered from the stools of infants with diarrhoea by W. D. Lambl in 1859. Lambl described them accurately but named them erroneously *Cercomonas intestinalis* in a brochure published in Russian in 1860. Later, Blanchard in 1888 renamed them *Lamblia intestinalis.* This parasite belongs to the genus *Giardia* and has a pyriform body, 10 to 20 μ in length and 6 to 10 μ in width, which tails off and presents on its anterior surface a reniform depression around which there are six flagella; in addition there are two flagella at the tail. The *Lamblia intestinalis* becomes encysted in certain conditions; the cysts are oval and greyish in colour, are surrounded by a thin membrane, and are of slightly less dimensions than the parasite itself. In severely affected cases the daily evacuation of these cysts has been computed in hundreds of millions. The upper part of the alimentary tract is the usual place of lodgment, but any part of the intestine, as well as the gall-bladder and bile ducts, may be infested. Moderate infestation may not give rise to any symptoms, but in the more severe cases the clinical picture may resemble that of amoebic dysentery. Microscopical examination of the evacuations establishes the diagnosis. In a recent review of this subject Chodzko[1] gives quotations from various authors showing that infestation may be intense, prolonged, and apt to set up fatal disturbances—even cancer, according to certain workers. Treatment is not discussed in detail, but it appears that arsenical preparations, especially stovarsol, are effective. Rodents are susceptible to the disease, particularly those associated with humans, and they may, of course, act as carriers. The hygienic aspect of the subject, as the author points out, is important, for the condition is undoubtedly more widespread than is supposed. Figures quoted as to the incidence of lambliasis in some ten or twelve countries can only be regarded as misleading, since they vary so widely according to different observers, though all agree that troops are more often affected by this type of infestation than civilians. In a condition such as this it is difficult to apply preventive measures on a large scale, and if the analogous problem of ankylostomiasis among miners be taken as an illustration of these difficulties the task would appear almost hopeless. Strict attention to individual personal cleanliness is the best safeguard, but at the same time the most difficult to enforce among those principally concerned.

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[1] *Gastrointestinal Dysfunction.* By Barton Arthur Rhinehart, M.D. Arkansas: Central Printing Company. 1939.

IS BOVINE TUBERCULOSIS INCREASING?

Under war conditions the quality, as well as the quantity, of home-produced food acquires enhanced importance. The production of milk, for instance, is likely to be increased in spite of the ploughing of some pasture land, and it is imperative that it should not prove the medium for carrying infection to children whose resistance may be reduced by deprivation in other directions as the result of prolonged hostilities. The failure of the Government's attempt to secure the passage of the Milk Bill last year is therefore to be deplored. There is now, of course, no early prospect of enlightened legislation of this kind. It may be remembered that the beginning of the modern grading system dates from the last war, when tuberculin testing was officially recognized by the Ministry of Food and higher prices were allowed for milk from tubercle-free herds. If this gives a glimmer of hope it is damped by the realization that pasteurization—the only measure we now believe to offer sufficient security—would be much more difficult to extend during war. Since the evacuated have mostly been transferred from large towns, where much of the milk is pasteurized, to rural areas without accessible pasteurizing plants, it is probable that even more children will have to consume raw milk than in the recent past. In these circumstances the records of areas where most of the milk is unpasteurized are of interest. Very full information in this connexion is contained in the annual report for 1938 of Dr. J. Greenwood Wilson, Medical Officer of Health of the City of Cardiff. In this large town about 11,000 gallons of milk are consumed daily. Only 13.6 per cent. is sold as pasteurized, 4.1 per cent. tuberculin-tested, and 1.2 per cent. accredited (in June, 1938), although about 42 per cent. of all the milk sold receives some form of heat treatment. Of 301 routine samples of milk, raw, non-graded, and unbulked, examined for tubercle bacilli, twenty, or 6.6 per cent., were positive. This percentage has only once been equalled in magnitude since 1927. These findings may be compared with the results of meat inspection at Cardiff's large public abattoirs, of which full information has been given in the annual reports over a period of years. The sources of meat stock are, of course, not necessarily the same as those for milk, but the particulars given indicate a general trend in the health of bovine animals. In recent years 13,000 to 15,000 cattle have been slaughtered annually, of which about 1,000 have been cows. Up to 1931 the proportion of cows found tuberculous ranged from 20 to 27 per cent. It then began to rise, and in each year since 1934 it has been over 40 per cent., reaching its maximum in 1936, when the percentage was 51.6. In 1938 it was 41.0. A similar increase, although naturally on a much smaller scale, can be observed in the proportion of heifers and steers showing manifestations of tuberculosis. The reason, therefore, does not seem to lie in any new practice of delaying the age of slaughter of cows, which, like bulls, are more likely to show signs of disease with advancing years. In the absence of any other explanation it is reasonable to suppose that these figures reflect a deterioration in the health of cattle, the evil effects of which on the milk supply may require more radical action than either the local authorities or the Ministry of Agriculture are able to take under the present law.

The Nobel prizes for physiology and medicine for 1938 and for 1939 have been awarded to Dr. Corneille Heymans, professor of pharmacodynamics in the University of Ghent, for his studies of the sinus and aorta mechanism in respiration; and to Professor Gerhard Domagk, of Elberfeld, in recognition of his discovery of prontosil.

Confident that war will not dry up the springs of medical charity, Sir Thomas Barlow appeals in our correspondence columns this week for donations towards the Christmas gift account of the Royal Medical Benevolent Fund.

Sir Robert Hutchison, President of the Royal College of Physicians, will deliver the David Lloyd Roberts Lecture before the Medical Society of London at 11, Chandos Street, Cavendish Square, W., on Thursday, November 16, at 3 p.m. His subject is "Medical Literature."

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[1] *Bull. Off. int. Hyg. publ.*, 1939, **31**, 457.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation.

FRACTURE AND DISLOCATION OF THE PATELLA

BY

E. P. BROCKMAN, M.Chir., F.R.C.S.

The most common injury of the extensor mechanism of the knee-joint is a transverse fracture of the patella, the result of a sudden contraction of the quadriceps while the knee is held in a position of flexion. Often such an injury would seem to occur with relatively slight violence. Other fractures, such as a comminuted fracture or a compound fracture, are due to direct violence and are much less common. They result from falls directly upon the patella or from motor-car accidents.

In addition to fractures of the patella two other injuries to the extensor mechanism may be met with. The first is a rupture of the quadriceps tendon just above the patella or a detachment of the whole tendon from the patella. This injury appears to occur in much the same circumstances as does a fracture. The second injury is a rupture of the patellar tendon, which is torn off from its attachment to the lower portion of the patella. The history of the accident, except when due to direct violence, is always much the same, and it would seem to be a matter of pure chance whether the tendon or the patella is damaged. The usual story is that the patient stumbles or misses his step and a sudden effort is made to avoid a fall. The knee gives way and the patient falls down, with pain in the limb. On attempting to rise he finds he is unable to do so, or, if he does get up, discovers that he is unable to walk or to take any weight on the injured limb. The differential diagnosis is seldom difficult. There is a loss of function, inability to extend the limb voluntarily, and immediate or very rapid swelling and pain.

Transverse fracture of the patella with much separation of the fragments is easy to diagnose, as a depression between the fragments can be palpated. Such fracture without separation, whilst it may be suspected owing to the tenderness upon pressure on the bone, may not be recognized without the help of an *x*-ray examination. Likewise a comminuted fracture may be difficult to differentiate on a purely clinical examination. The same applies to a compound fracture, except that there will be a wound over the patella from which blood and serum may leak.

A transverse rupture of the tendon of the quadriceps is often easy to diagnose; if there is any doubt the knee should be flexed slightly, when the separation becomes obvious and pressure on the hole gives rise to marked tenderness. Rupture of the patellar tendon has symptoms similar to those observed in these other injuries, but upon examination a hollow can be felt below the patella, which itself lies on a higher level than does that of the other limb. In addition we must remember that in both fractures and injury of tendons a haemarthrosis is present, except in rupture of the patellar tendon, which is an extra-articular lesion. Also most fractures are associated with a rupture of the joint capsule and the lateral expansions of the tendon, and if the separation of the portions of the patella is considerable these soft structures must be badly torn. If there is no separation there is unlikely to be much damage to the soft structures.

First-aid Treatment

The patient will be unable to bear his weight on the limb and probably will be found lying upon the floor or may have been carried to bed. If he has to be moved the limb may be splinted temporarily with a back splint or, if this is not available, the two lower limbs should be tied together. If the fracture is compound the wound should be covered with a sterile dressing until arrangements can be made to deal with the condition properly. After removing the patient's clothes a clinical examination must be made to decide the nature of the injury. The limb must be radiographed, but as the patient is probably badly shocked it may be wise to wait until the next day before doing this.

Simple Transverse Fracture with no Displacement

If the injury is a simple transverse fracture of the patella with no displacement it can be assumed that the capsule is not ruptured on either side and therefore, beyond protecting the limb from any further violence, it is not necessary to treat the fracture itself. The condition we have to deal with is a traumatic synovitis with perhaps a little blood in the joint. If the patient is in much pain there is a very definite haemarthrosis. The patient is kept in bed to start with, the knee being supported by a pressure pad and bandage. A layer of wool is applied to the injured knee and a few turns of bandage put on; another layer of wool is then applied, with further turns of bandage, followed by a third layer of wool, the bandage now being finished off. Besides splinting the limb this treatment will help to get rid of the fluid. While rest is indicated for the traumatic synovitis the muscular control must be maintained. It is therefore essential that the patient should have a masseuse—not to do any massage, but to help him exercise the quadriceps and if necessary to give faradism to these muscles. As soon as the very acute symptoms have subsided, active movements of flexion and extension of the knee must be begun; they may be increased in range as rapidly as symptoms permit. Treated in such a way, the patient with a simple transverse fracture of this nature should be on his feet within a few days, and if his work is of a sedentary character and transport is easy there is no need for him to be away from work for more than a week or ten days. When all the fluid has disappeared from the joint a crêpe bandage is preferable to an elastoplast bandage: it can be removed for physiotherapy and does not tend to cut in behind the knee or make the skin sore. If the patient's work is heavy six weeks will elapse before he is fit to undertake it. Should he return too soon the knee will fill up with fluid and complete restoration of function will be delayed.

Transverse Fracture with Separation

This, the most common injury, is best treated by open operation unless the patient is very old and there is some other contraindication. To relegate the patient to a knee cage is a policy of despair rather on a par with the ordering of a calliper for a fractured neck of the femur. Open operation, no matter what its nature, is not a serious procedure, and can be rapidly performed. It is wise, whatever is done to repair the damage, to allow the patient to rest quietly for a few days before operation. After a fracture of the patella the soft tissues become so oedematous that if operation is performed at once it is difficult to identify with any ease the structures one is handling. After a few days the oedema subsides, making the operation easier.

As with most surgical problems, considerable difference of opinion exists as to the most desirable procedure, in the way of open operation, for the repair of this fracture. There are two things we must set out to do at operations: first, the capsule which is torn transversely must be sutured ; and, secondly, the fragments of the patella must be dealt with. These may either be wired together or they may be removed. The former is the more classic procedure, and probably cases still occur in which it should be done ; but for most patients removal of the patella is the most satisfactory operation, and if upon opening the joint there are already signs of arthritis it quite definitely is the operation of choice. The points in its favour are that it is easy to do and that it can be done very quickly. There is nothing to refracture afterwards, and the chance of the development of an arthritis between the patella and the femur is avoided. Wiring the fragments together, however well done, may leave a ridge on the articular surface of the bone and involve the risk of a chronic persistent pain in the joint. The function of the knee after excision of the patella is excellent, and there is no loss of power in the quadriceps. The only thing that the patient notices afterwards is that when the knee is flexed the condyles of the femur appear very prominent.

THE OPERATION

The limb is prepared in the usual manner, from the groin down to and including the foot. The towels are arranged in such a way that the knee can be flexed without risk of any part not prepared becoming uncovered. It is better not to employ a tourniquet or an Esmarch bandage, because they tighten up the quadriceps and may make it difficult to suture the torn surfaces together.

The fracture may be approached through either a longitudinal or a transverse incision about four inches long over the site of the fracture. The torn fibres of the quadriceps expansion which lie over the surfaces of the fracture require clearing away but not removing. The blood clot which fills the joint is removed. The upper fragment of the patella is held with forceps and dissected out of the tendon of the quadriceps, taking care to keep the scalpel close to the bone so that the tendon remains as intact as possible. The lower fragment is then removed in a similar manner. All bleeding is carefully stopped, and the expansion of the quadriceps torn upon either side is sutured with interrupted sutures of No. 1 chromic catgut. It is not necessary to suture the synovial membrane, and in suturing the capsule care should be taken not to shorten the expansion, otherwise this may contribute to difficulty in obtaining full flexion of the knee. The hole left where the patella has been removed can be closed by suturing the capsule longitudinally in this part. It does not matter if closure is not complete. The skin incision is closed with interrupted salmon-gut sutures and a dressing applied. The limb is then bandaged over layers of wool from the middle of the thigh down to the middle of the leg. This will provide all the splintage necessary. The bandage may need slackening after twenty-four hours.

With the limb in extension active contraction of the quadriceps is started after three days and the patient encouraged to begin slight movements of flexion in another two days. The stitches are removed on the ninth day and the limb firmly bandaged. If the incision is satisfactorily healed active flexion continues and, provided that the patient maintains voluntary power of full extension, can be quickly increased in range. After twelve to fourteen days the patient may be got walking with two sticks, the knee being still supported by a firm bandage or, if he is nervous, a posterior plaster slab. The rapidity with which full function is recovered varies greatly, but in six to eight weeks the patient should be fit to resume all but the most strenuous of occupations, such as climbing ladders. He will have to wait to do this until he has complete confidence in the limb. Sometimes full flexion is difficult to obtain in elderly patients, especially if they have been afraid to bend their knee in the first two or three weeks. Rupture of the capsule in the portion where the patella has been excised is known, but it is rare ; when it does occur it calls for a secondary suture.

Suture of Transverse Fracture of Patella

The initial stages of the operation with regard to excision of the fragments are identical with those just given. When the portions of the patella have been cleared they are pulled together so that the fractured surfaces fit, and are held thus by an assistant with two sharp hooks. They may be fixed now by suture, with catgut, of the transverse expansions and the expansion over the surface of the patella, or else the two fragments are drilled transversely and then the material used is threaded through and tied. At one time silver wire was employed for this purpose, but this has been replaced by Viennese twist, size 3. This material has the advantage that it can be tied like an ordinary ligature ; silver wire is much more difficult to tighten, and the knot made was very liable, however well it was bent down and buried, to spring up again and cause trouble under the skin: also it often broke. If the patella is wired in this way it is essential to suture the torn expansions upon either side with catgut. The after-treatment is exactly the same as for removal of the patella, except that flexion cannot be obtained so rapidly ; if it is, the patella is likely to unite with fibrous tissue and not with bone. Subsequent stiffness of the knee is also likely to be more troublesome than when the patella is removed.

Simple Comminuted Fractures

The treatment of this type of fracture will depend upon the degree of comminution and the amount of separation of the fragments. In many of them, although the patella is split up into a number of pieces, there may be little separation and no evidence of the expansion of the quadriceps over the patella, nor of the lateral expansions being seriously damaged. In such circumstances there is no need to operate upon the knee. The fragments will unite up well, and treatment is required only for a bad synovitis or haemarthrosis. The limb is bound up firmly or, if very painful, fixed on a posterior plaster slab until the pain subsides. The quadriceps are treated to prevent wasting, and movements begun as soon as symptoms permit. The prognosis is good unless the patient develops an arthritis. Should this happen it will be necessary to remove the patella, but it does not follow that an arthritis is bound to develop. After such an injury the patella always appears to be larger than does the patella of the other limb. In instances where the fragments are widely separated it is better, as soon as the skin has recovered from the trauma, to remove the fragments of the patella rather than to attempt to fix them together. Such a task must be very difficult, and at the best the result will be a joint which is very sensitive and liable to swell upon even the slightest of injuries or over-use.

Compound Fractures

These are fortunately very rare, but are seen in motor-car or street accidents. In such cases the treatment of the fracture is of secondary importance, and attention must be directed to preventing the knee-joint becoming infected. As soon as possible, under an anaesthetic, the wound must be cleaned and any dirt or fragments of bone sticking out of the wound removed. It may be necessary to enlarge the skin wound to enable this to be done. The joint if widely opened must be washed out, but no attempt must be made to repair the damage to the capsule or patella. The surfaces of the wound may be approximated with salmon-gut sutures but not closed tightly, so that any serum which may collect can drain into the dressing and not collect under tension in the joint. The limb must be fixed in a Thomas splint, with skin extension applied to the leg. The dressing should be changed every day, and the stitches removed if any sign of infection appears. Should the joint become infected it will require treatment as for any other acute infective arthritis. When the joint has recovered from the risk of infection and the skin has completely cleared up, the fractured patella will receive the appropriate treatment.

Injuries Related to Fracture of Patella

There are two injuries very closely related to fractures of the patella which require consideration.

Rupture of the Quadriceps Tendon.—This is usually a complete transverse tear, and in nearly every instance if not treated surgically results in a very weak limb. The operative treatment is simple. Through a transverse incision directly over the site of the tear the damaged tendon, with its expansions, is sutured with interrupted catgut. This does not take very long, and the after-treatment is similar to that used in those cases where the patella has been removed. If the rupture is only partial, conservative treatment will give a satisfactory result.

Rupture of the Patellar Tendon.—This is a very rare accident. If the tear is only partial the limb should be fixed in full extension in plaster for six weeks and the patient permitted to get about on crutches. After removal of the plaster active movements may start and, provided full voluntary extension is maintained, flexion may continue to be increased. If, however, the tendon has been completely torn off the lower hole of the patella, conservative treatment will not be sufficient. The patella is pulled up to a higher level by the quadriceps, while the tendon itself contracts. In these circumstances the site of the injury must be explored and the damage repaired. There is little tissue left on the patella to which to suture the tendon back, and it is therefore necessary to use a fascial graft to repair the damage. The lower part of the patella is drilled transversely so that the graft can be threaded through. It is then sutured to the tendon whilst the patella is held by a sharp hook. The limb must be fixed in plaster for six weeks, after which time the quadriceps must be toned up and active movements of flexion begun. Full function will not be restored for four to six months.

Traumatic Dislocation of Patella

This injury is a very rare one. It is always an outward dislocation. The patient is found in acute pain, with the knee held in a position of flexion at about 45 degrees. It may be that some friend has pulled the limb straight and the dislocation has been reduced before medical aid is sought. If the dislocation is seen soon after it has taken place it may be reduced without an anaesthetic. The limb should be held as straight as possible and, with one hand made into a fist placed behind the knee, the patient is instructed to try to press the knee against the hand. This will result in a relaxation of the hamstring muscles, and quite light pressure upon the outer border of the patella will enable it to be lifted forwards, when it will at once slip back into position. If this cannot be done, or if the patient is very nervous, the dislocation may be reduced under gas. Subsequent treatment deals with the traumatic synovitis which results. A pressure pad and bandage are applied to prevent the collection of fluid in the joint, and treatment given to the quadriceps. The joint will lack strength and be sensitive to stress for perhaps a week or two, so that it may swell up. Traumatic dislocation of the patella seldom recurs, and in this respect is essentially different from the habitual or recurrent dislocation which is due to an anatomical abnormality.

THE USE OF RADIUM IN WAR-TIME

WITH APPENDIX ON RADIUM POISONING

BY

L. H. GRAY, M.A., Ph.D.

AND

J. READ, B.Sc., Ph.D.

RADIUM UNDER WAR-TIME CONDITIONS

In response to inquiries concerning the necessity or otherwise for rendering radium permanently out of commission under war-time conditions, we submit the following statement of the position as it seems to us.

The Danger Inherent in Use of Radium in War Time

The danger to life lies in the possibility that through a direct hit by high explosive on a building in which the radium is in use the radium containers might be broken and the naked radium liberated, since radium element which has entered the body is only slowly eliminated and may produce severe injuries and ultimately death.[1] If naked radium is lying about in the open air there will be serious risk that some will be breathed as radium dust. Even in a laboratory where radium is handled under comparatively carefully controlled conditions it is possible to detect radium dust in a sample of the air in the room. Further, the amount of radium which is lethal when fixed in the body is definitely known to be extremely small—namely, about one-millionth of a gramme.[1] Thus the complete destruction of a ward in which 500 mg. of radium was in use on a number of patients might liberate many thousand lethal doses of radium.

It is difficult to find data on which to base an estimate of the proportion of the radium breathed which becomes fixed in the body. By experiments with animals it has been found that of the radium which enters the blood stream 50 per cent. is fairly rapidly eliminated; but about 4 per cent. is still in the system at the end of six months, and 2 per cent. at the end of two years (Rajewsky, 1939). These figures, as might be expected, were found to be subject to wide individual variations. There can therefore scarcely be any doubt that if radium element is to be used under war-time conditions one of the following alternatives must be adopted.

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[1] See Appendix, " Radium Poisoning."

(*a*) The radium might be used at a site where a direct hit by high explosive is a negligible risk.

(*b*) The radium might be used in such a form that it could be transferred to the bottom of the "radium well" within, say, five minutes of an air raid warning. Clearly, no interstitial radium treatment could be given in these circumstances. The most convenient form in which the radium could be used would probably be teleradium therapy. Several existing "radium beam" units are already equipped with apparatus for the pneumatic transfer of radium from the beam unit to a safe, and it would appear to be a relatively simple matter to arrange that the radium, instead of being returned to the safe, be put into a container and automatically lowered down a shaft, thus completely avoiding exposure of personnel and ensuring that the radium was stored in safety. This could probably be done within two minutes of an air raid warning. Arrangements could probably be made to transfer radium in use in the form of plaques, and perhaps radium in gynaecological use, into an ordinary "radium well" within five minutes of a warning. The difficulty here is essentially one of *organization* so as to ensure (i) that no radium is overlooked; (ii) that all plaques are taken from patients simultaneously, so as to reduce the time to a minimum; and (iii) that exposure of personnel is avoided. The details of such organization would have to be very carefully worked out, but such procedure does not appear to present any insuperable technical difficulties.

(*c*) The radium could be used under normal conditions if it were agreed that, should the site be hit while the radium is in use, either the site will be abandoned for all time, or the site will be carefully cleared of all debris by suitably protected workers, and the debris, together with a small depth of undisturbed earth, be buried elsewhere. If suitable precautions were taken the task of clearing the debris need not involve danger to personnel. Radium continually gives off the gas radon, which is injurious in quite low concentrations, but it is probable that even if 100 mg. of radium were liberated in the space of a single ward the radon concentration would not rise to dangerous levels under open-air conditions. Moreover, the concentration can easily be tested before work is started. The danger of breathing radium dust could be eliminated if the workers wore suitable masks (Leitch, 1935). The average concentration of radium element among the debris would be low compared with that in radium ore. Thus, for example, if one wing of this hospital[1] were demolished while one gramme of radium was in use the concentration of radium in the debris would only be about one-hundredth of the concentration of radium in the ore mined in the Belgian Congo. It is to be noted, however, that in removing debris contaminated with radium the latter may be encountered in small patches of high concentration in the demolished building, so that adequate precautions against the breathing of the dust would be imperative for those clearing the debris.

(*d*) *The Use of Radon*.—Although radon is injurious to health if breathed, it is not likely that the liberation of even as much as 500 millicuries by complete demolition of a building would appreciably add to the loss of life and injury caused by the high explosive itself. The site would not be permanently contaminated. The radiation from radon filtered through 0.5 mm. of platinum is identical with that from radium element of the same degree of filtration. In the case of radon irradiation the intensity of the radiation is high at first and falls away to zero (unless fresh radon is introduced), with a half-value period of three and a half days. In all other respects radium or radon may be considered to be identical sources of radiation. The radon plant could be set up either in such a position that the risk of a direct hit is negligible, or in a naturally occurring cave or tunnel or a specially constructed "bomb-proof" chamber.

APPENDIX ON RADIUM POISONING

Below are listed a number of papers dealing with this subject published during the last ten years. It is evident that during the earlier part of this period the difficulty of measuring minute quantities of radium in a living person, and tiny radon concentrations in the breath, led to much inaccuracy and conflicting results. However, in the work of Rajewsky (1936, 1939; Janitzky, Krebs, and Rajewsky, 1938) and Robley D. Evans (1933, 1937; Evans and Aub, 1937; Aub, Evans, Gallagher, and Tibbetts, 1937-8) accuracy of measurement has reached a high standard—Evans (1937) can measure down to 0.2 microgramme in a living person—and their results seem reliable and consistent. Among earlier papers a series of four in the *American Journal of Industrial Hygiene* on conditions in the watch-dial painting industry is notable (Ives, Knowles, and Britten, 1933). From a study of this literature the behaviour of radium after its introduction in the body appears to be as follows.

Most of the radium taken by mouth is rapidly eliminated—about half in a few days and 90 per cent. in a few weeks. The rate of elimination continually diminishes, however: after six months it is about 0.02 per cent. of the remaining radium per day, after one year 0.004 per cent., and after ten years 0.003 per cent. The amount of radium still in the body after one year can for practical purposes be considered as fixed there. If the radium is taken intravenously the initial rate of elimination is about half as quick, but after a few weeks the rate becomes the same. However, owing to the slower start a given quantity of radium taken intravenously will always show a higher residuum than if it is taken by mouth. Rajewsky (1936) says that about 0.5 to 1 per cent. of radium taken by mouth and from 2 to 5 per cent. of radium taken either intravenously or by breathing becomes fixed in the body. Evans (private communication) has found that the fractional retention of radium taken by mouth is from 1 to 5 per cent., and he believes that for intravenously injected or breathed radium the retention is about 10 per cent.

In the first week or so radium is distributed throughout all the tissues; it then becomes concentrated in bone trabeculae and finally in the bone cortex. However, the concentration is by no means uniform throughout the skeleton. The distribution found by Rajewsky (1936) in a woman poisoned by breathing radium dust, who died three years after her last exposure, is given in the table:

	Per cent.		Per cent.
Lung	9	Thigh bone	21
Heart	0.0007	Rib	32
Liver	3	Vertebrae	34
Spleen	0.007		

Schlundt and Failla give the following radium concentrations in various bones:

Humerus	2.7×10^{-9}	grammes radium per gramme dry bone
Rib	3.4	
Vertebra	5.2	

During the early part of the history, radon in the breath is about 50 per cent. of that produced by the radium, but after some years, when the radium is fixed in the bones, this drops to from 3 to 10 per cent. (Rajewsky, 1936). Elimination of radium at this stage is 90 per cent. in the faeces and 10 per cent. in the urine (Evans, 1937).

The fatal dose is usually stated in terms of the residual radium at the time of death. However, as death may be as long as ten years after the radium intake, the actual damage to which death is due may have been caused by the much larger quantities originally present. Evans describes the case of a watch-dial painter who was examined for radium once a year for eight years with negative results, presumably by a crude method. He developed necrosis of the jaw, and just before he died Evans (1937) measured a total content of 1.2 microgrammes. Rajewsky (1936) describes the case of a woman whose death resulted from the breathing of radium dust (lung carcinoma) five years after starting employment in a radium laboratory. After her death 6 microgrammes of radium were measured in the body; the lung, which was the site of the immediate cause of death, contained less than 1 microgramme. Several similar cases can be quoted, but in contrast to these are two women described by Evans (1937). The first had intravenous injections of radium chloride ten years back and still contains 8.5 microgrammes. Her weight is 160 lb. and height 5 ft. 8 in. The second took radium by brush-licking while watch-dial painting during 1922 to 1929, and in 1937 was still so employed, except that a glass pen technique was used. She then contained 9.7 microgrammes, and her weight was 116 lb. and her height 5 ft. 5 in.

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[1] The Mount Vernon Hospital—a solidly built two-story building with subway. The wing measures about 35 feet by 150 feet.

Evidence of harmful effects of radium less serious than death is contained in the *American Journal of Industrial Hygiene* reports (Ives, Knowles, and Britten, 1933). An investigation was made from June, 1929, to March, 1930, on two groups of watch-dial workers: Group A, seventy persons, all having started work after brush-licking had been abolished on January 1, 1927; Group B had worked before that date. Group A contained persons who had from 0.1 to 2.4 microgrammes of radium due to breathing radium dust. They showed a tendency to a lower red cell and haemoglobin determination than in a group of controls. Bone changes for Groups A and B, classified against radium content of the individuals, are shown in the table:

Microgrammes	Per cent. with bone changes
1	5
1 to 1.9	12
2 to 2.9	17
3 to 4	40
4 and more	100

These measurements were made during exposure to radium intake and within relatively few years of the first exposure, in contradistinction to the earlier cases mentioned, which had all the radium fixed in the skeleton for some years.

According to Martland (1931; McClelland, 1933), for several centuries the underground workers in the cobalt mines of the Schneeberg district and in the pitchblende mines of Joachimsthal have been subject to a pulmonary disease resulting in death in middle life. An official investigation extending over three and a quarter years resulted in a diagnosis of carcinoma of the lungs in 62 per cent. of the deaths among miners. During the same period examination of 362 persons in the same districts, not working in the mines, discovered no indication of malignancy in the lungs. These deaths have been variously ascribed to rock dust, dampness, volatile arsenical compounds, chrome and arsenic dust, but, as the air of the mines is distinctly radio-active and as breathing radium dust in laboratories has been shown to produce lung carcinoma, the radio-activity of the air must be regarded as a likely cause.

From a consideration of these papers it seems probable that, though there is a considerable variation from one person to another, an ingestion of about 500 microgrammes will lead to a fixed quantity of about 5 microgrammes, causing ultimate death. In some cases as little as 50 microgrammes might produce this result. These quantities are roughly halved if radium is taken intravenously; but it is difficult to deduce from this the fatal dose which must be inhaled, as we have no data on what proportion of dust inhaled is retained in the body.

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⁂ A more complete discussion of radium poisoning, written by Dr. J. Read, will appear shortly in the *British Journal of Radiology*.

Dislocation of Hip.—In about 5 per cent. of all patients with congenital dislocation of the hip the deformity is combined with other malformations. In such cases the dislocation of the hip appears to be caused by mechanical factors and should be regarded as a secondary deformity. Twenty-eight illustrative cases are described by the author and the previous literature is reviewed.—Significance of Dislocation of Hip combined with Other Malformations for Problem of Dislocation of Hip.—W. Müller.—*Z. Orthop.*, May 30, 1939, **69**, 293.

THE EMERGENCY HOSPITALS' OPPORTUNITY

"Somewhere in England,"—in one of the London sectors, in fact—an emergency hospital has been prepared, like hundreds of others, for the reception of air raid casualties. Part of this hospital is a workhouse building, one hundred years old, which has been adapted for the purpose; the other part consists of more modern buildings, together with some recently constructed hutments. Altogether the hospital will accommodate between 800 and 1,000 patients. The staff includes fifteen specialists.

It is regarded as important that the hospital should provide in-patient facilities for London patients who have been deprived of hospital service in their partly evacuated city. It is true that the Ministry of Health arranged for patients actually occupying beds in in-town hospitals, and not fit to be sent home, to be accommodated elsewhere; but provision for the constant accession of fresh cases was limited. This hospital, thirty or forty miles from London, is in effect functioning as a London hospital, to which patients are brought twice a week in motor coaches converted to ambulance use.

The medical superintendent and his staff are keen on making some local contribution to the emergency. The hospital is situated in a town whose normal population has been increased by 30 per cent. since war began owing to the presence of evacuated persons from London. There is only one other small general hospital, which even before the war was always filled to capacity. Accordingly the emergency hospital is proposing to start various clinics to which local practitioners may send patients for consultation. The specialist units will deal with both local and transferred cases. The ophthalmological unit, for example, will take cases from Moorfields and from the ophthalmological departments of other London hospitals as well as cases arising at its own doors. The same is true of the dermatological unit, the maternity unit, and the projected dental unit, which last will also deal with facial injuries. A first-class pathological department has also been established, half of its equipment coming from one London hospital and half from another. In addition the hospital service has a training school for student nurses, fifty of whom have been transferred from a school in London with their sister-tutor. Again, the hospital expects to receive military casualties from the front.

The trouble, almost inevitable in any scheme of emergency organization, is that while those on the spot take a long-range view and are eager to grasp new opportunities, a more remote officialdom insists on regarding all such hospitals only as improvisations to meet a temporary emergency. This has the unfortunate result that, whereas the provision is in many respects on generous and enlightened lines, in others it is wholly inadequate to the situation, at least to the situation as those on the spot appreciate it.

Experience of an Up-graded Hospital

The hospital consists of an old workhouse building, newer infirmary and casual blocks, and a number of recently constructed hutments. A wing of the old workhouse has been transformed into a psychiatric unit, for which it offers advantages, consisting as it does of a number of small wards, each with four or five beds. The unit, which is self-contained, thus ensuring the quiet which is essential, is in charge of two London psychiatrists who will from the beginning be able to deal with the more difficult cases of neurosis. Its sister-in-charge was trained at the Cassel Hospital. The unit will take in not only shell-shock cases but civil cases of nervous collapse. One of the old day rooms has been turned into a room for occupational therapy, another into a dispensary, and a third into a dental clinic. What was formerly a school room for the Poor Law children, and was afterwards used as a chapel, though not consecrated, has also been turned into a ward. The old reception wards have become first-aid posts. A part of the building is still appropriated to the use of the workhouse inmates.

The infirmary part of the institution, which is of more modern construction, has been arranged to take 150 beds, which are fully occupied by local and transferred cases. The maternity unit also has been established in this part of the building. In the former casuals' block the dormitories have been made into wards for ambulatory cases, fitted with bathrooms and sinks, and afford accommodation for seventy or eighty patients. The room where the tramps had their meals is now a receiving room for local air raid casualties, for it has to be remembered that in the unpredictable course of air warfare even a country hospital may have casualties at its doors. Provision is made for urgent operations, and sisters, nurses, and orderlies are in attendance. Twelve cell-like cubicles in which the former inmates were sometimes isolated for various reasons have been transformed into individual consulting rooms. In this part of the building arrangements are made for the care and treatment of school children, cleansing facilities being provided and examinations made for conditions such as scabies and impetigo. It should be added that the old associations of the place are so far as possible eliminated by the cheerful scheme of decoration employed. Even the frames which have been put up to darken the windows have their monotony relieved by designs by local artists.

Hutments: Advantages and Some Criticisms

In the garden of the institution there have been set up eleven ward huts, each equipped for forty-two patients. The dimensions of the huts are 108 feet long by 25 feet wide. One hut of the same size is assigned solely for the purpose of an operation theatre and *x*-ray department, and another for that of kitchen to serve the whole establishment. The huts are built of breeze blocks on a frame, and a concrete wash gives them the appearance of concrete houses. The roofs are of corrugated iron. There is a great deal to be said for the way in which this construction has been managed. The planning is good, with plenty of window space. A sufficiently wide gangway runs down each hut between the rows of beds, and the beds seem to be spaced adequately. Each of the wards is heated by three Canadian stoves down the middle, and hot water is supplied by a separate boiler for each hut. The only hut to be centrally heated is the operation block. Each hut has its own service kitchen, bathrooms, lavatories and sluice room, and dressing room.

The operation block includes a sterilizing room, a room for dressings, surgeons' and nurses' changing rooms, and space for the storage of theatre linen. The theatre has four tables, lighted by shadow-proof lamps, but only two sinks or washing places, and these located together at one corner. The *x*-ray room is large, and rooms are provided for developing and viewing.

While there is much that is admirable in the hutment arrangement, certain disadvantages, each relatively small but in their cumulative effect likely to prove a severe handicap in times of pressure, make themselves obvious. For example, in each ward only one sink has been provided. There are no chairs, ward tables or cabinets, or bedside lights, so that injections and examinations will have to be done either by the light of a torch or of the pendant lamps from the ceiling. Again, there are no means of keeping food hot after it comes from the central kitchen, which is in another hut at some distance from many of the wards. A more serious complaint relates to the construction of the beds, which are of a light collapsible type and without castors. Yet another criticism is that the space between the huts has merely been dug over and left, so that it is impracticable—even if the beds had castors—to wheel patients out into the open air as it would be if the space were gravelled; yet french doors have been provided.

The hut where operations are done is under the disadvantage of being approached by a pathway which certainly is roofed over but is otherwise open to the weather, so that patients carried in and out must be exposed to the cold air. The anaesthetics room also is not happily placed, and in the absence of partitions the anaesthetizing of patients takes place in what is practically a public thoroughfare. Similarly, the approach to the x-ray room compels the patients to be taken either through the operating theatre or out into the open right round the building.

The staff at this hospital are billeted out, with the exception of forty nurses, for whom there is a nurses' home in the old infirmary block. A skeleton staff is always in attendance, while others are at call.

SULPHONAMIDES FOR INFECTED WOUNDS

PROPHYLAXIS AND TREATMENT

In our issue of October 21 (p. 834) we published a War Office memorandum concerning the use of sulphonamide derivatives for prophylaxis and treatment of wound infections. Supplementary Memorandum No. 1 is now being distributed from the War Office to all officers of the Royal Army Medical Corps.

War Office Supplementary Memorandum

In the above-mentioned memorandum (A.M.D. 7, dated October 11, 1939) it was emphasized that there is no evidence yet available for assessing the reaction to these drugs of persons suffering from shock. The fact that they may stand the drugs badly is probable. It is therefore advisable that the first batch of cases to which sulphonamide derivatives are administered for the purpose of prophylaxis or treatment should be carefully observed. If patients are severely shocked, treatment with these drugs would be better suspended until the circulation, temperature, and urinary excretion have been re-established to reasonable levels by treatment of the shock *per se.* Should there be evidence which indicates that the drugs, in the doses suggested, are not well tolerated, administration should be suspended or the dose reduced.

If experience shows that the dosage given in the original memorandum is too high, it is suggested that the undermentioned modified course of prophylaxis and treatment should be tried on a further batch of cases.

Modified Course for Prophylaxis and Treatment

SULPHANILAMIDE AND M & B 693

Prophylaxis.—Total of 3 gm. per diem to extend over a period of four days, administered as follows: 1 tablet every four hours for four days.

Treatment.—First twenty-four hours: Total dosage 4 to 6 gm., according to severity, but in extreme cases, such as septicaemias, up to 9 gm. Spacing of dosage: Four-hourly, so that half the total dose is given during the first two administrations, and the balance equally divided between the remaining four administrations. Second twenty-four hours: Total dosage and spacing similar to the first day. Subsequent days: Dosage to be guided by the condition of the patient, reducing the administration of the drug to 2 to 3 gm. per diem. Total period of administration not to exceed nine days.

IMPORTANT INSTRUCTION

It is extremely important that when patients who have received prophylactic or curative treatment with these drugs are transferred from one medical unit to another, clear indication should be given in the transfer documents as to treatment, and, in particular, which drug has been employed, as well as the *total* dosage given. If this is neglected there may be a grave danger of overdosage, with the consequent risk of agranulocytosis. Individuals who have been found to be unduly susceptible to sulphonamide derivatives should have this fact clearly stated on their documents, in order that the drugs may not again be administered at some future date. Susceptible persons inevitably suffer a recurrence of complications when a fresh course of the drug is instituted.

A.M.D.7.
War Office,
November 1, 1939.

Reports of Societies

LATENT VIRUS INFECTIONS: THEIR BEARING ON THE CANCER PROBLEM

At a meeting of the Section of Comparative Medicine of the Royal Society of Medicine on November 1, Dr. C. H. **Andrewes** of the National Institute for Medical Research delivered his presidential address on the subject of latent virus infections and their possible relevance to the cancer problem. He said that animals and plants might harbour viruses within their cells though showing no evidence of disease; bacteria, too, might carry a bacteriophage which did not materially affect them. Such phenomena might be called "latent virus infections."

Transient and Persisting Infections

Dr. Andrewes spoke in the first place of transient latent infections—namely, those diseases in which an animal became infected with a parasite, the infection ran its course, and the parasite ordinarily ceased after a time to be recognizable, but at no stage did overt symptoms of disease occur. A small quantity of residual virus might be very hard to demonstrate in a recovered animal, and therefore it would be more accurate to call this group "apparently transient latent infections." The natural subclinical immunization of many human beings against diphtheria might be ascribed to transient latent infection. Many inhabitants of the yellow fever regions of America and Africa had neutralizing antibodies in their serum though they had never suffered from classical yellow fever. During the course of influenza epidemics the serum of many persons showed substantial rises in neutralizing antibodies against the virus, though the people concerned remained in perfect health. The majority of adults had antibodies against poliomyelitis virus in their blood, probably indicating part contact with, and even inapparent infection with, the virus of infantile paralysis. He also mentioned a bird disease, psittacosis, saying that it was a normal course of events for budgerigars nesting in aviaries in California to develop a symptomless infection, associated with enlargement of the spleen, with psittacosis virus.

His second group consisted of persisting infections with virus as a sequel to overt disease. After an overt attack of a virus disease the virus might continue to be harboured by the host after the disease symptoms had long since disappeared. Poliomyelitis virus had been recovered from nasal washings of man during convalescence, and the very similar virus of mouse paralysis had been found in the spinal cords of recovered mice for as long as a year after infection. Fowls infected with the virus of fowl-pox continued to carry it for long periods, particularly in the liver. The virus of foot-and-mouth disease had been, according to some workers, detected in the urine of hyper-immunized cattle 246 days after infection. Other examples were lymphocytic choriomeningitis and equine infectious anaemia. Virus might be masked by antibody and therefore hard to demonstrate. Some workers believed that persistence of virus after a disease was the rule, life-long immunity being explicable as an infection immunity, an immunity which persisted only because the virus has never completely died out of the body, but Dr. Andrewes thought that caution was needed before accepting that hypothesis.

Indigenous Virus Infections

A third group consisted of indigenous virus infections, which were symptomless like the first group, persistent like the second, and in addition usually infected their host very early in life, possibly making their entry in infancy or even *in utero*, or being handed down from the parent in the germ plasm. This type of host–parasite relationship had been described as perfect parasitism, an association in which the two partners were perfectly adapted to one another, neither causing the other inconvenience, and with admirable arrangements for perpetuating the partnership from one generation to the next. Dr. Andrewes discussed a number of examples such as lysogenic bacteria, viruses carried by normal potatoes, lymphocytic choriomeningitis, herpes simplex, virus III of rabbits, and mouse-pneumonia viruses.

His final class was complicated latent infections. Evidence had recently been brought forward to suggest that the virus of swine influenza might pass through an intermediate host in lung-worms. The ova of such worms might be passed in an infected pig's faeces, be ingested by earthworms, in which some stages of the life cycle might be passed, and then these earthworms might be eaten by other pigs and the lung-worms find their way through the intestinal walls back to the susceptible tissues in the pig's lungs. But this was not enough to make a pig go down forthwith with swine influenza. The virus would lie harmlessly in the worms until some provoking stimulus lit up the infection.

Latent Viruses and Cancer

Three important features kept recurring in many of the instances he had mentioned—namely, ubiquitous occurrence, infection from early life onwards, and possibility of upsetting the host–virus equilibrium with production of disease. Theories about cancer which claimed a role for virus in the aetiology must postulate that such viruses were very widely distributed in the animal kingdom and that they were normally latent infections but could be lit up by some stimulus such as the application of a carcinogenic hydrocarbon. Admittedly there was little direct evidence that cancer was caused in the manner suggested, but some facts in experimental research seemed to point in that direction.

In considering certain neoplastic diseases in the light of this knowledge about virus infections, he began with fowl paralysis (neurolymphatosis), an obscure disease which was certainly related to neoplasms. Dalling had stated recently that there were three theories of the nature of fowl paralysis—that it was an infection, that it was a tumour, and that it was a virus disease. While "reluctant to introduce the Athanasian Creed into pathology," Dr. Andrewes suggested that here there were not three explanations but one explanation—an infection with a tumour virus would serve as a theory to cover all the facts. Evidence in some recent work by Blakemore had been obtained suggesting that fowl paralysis was the chronic stage of an acute disease which might naturally be wholly or largely symptomless. There was as yet no proof that the agent was a virus, but analogy with similar conditions in fowls, such as leukaemia and sarcoma, made it very probable. There was also evidence that environmental factors might determine whether or not a latent infection would blossom out into declared disease.

Another neoplastic disease which might be considered in the light of this knowledge about virus infections was tar sarcomata in fowls. Most normal fowls as they grew older developed neutralizing antibodies active against filtrates of Rous sarcoma virus; the antibodies were, however, usually low in titre compared with those found in birds bearing slow-growing tumours. Their presence suggested, although it did not prove, that many normal fowls might carry or had had contact with a virus serologically related to tumour viruses such as described by Rous. There was evidence that tumours induced in fowls by injections of tar or other carcinogens might generally owe their continuing malignant character to the action of a tumour virus within the cells, such a virus having been liberated from some restraint by the poisoning of the cells by the tar.

The Heredity Factor

Yet another piece of work of interest in this connexion was Bittner's experiments with breast carcinoma in mice. Some strains of mice used in cancer research work had an incidence of breast cancer in breeding females of 80 to 90 per cent., whereas in others the incidence was almost *nil*. In hybrids between two such strains it had been found that the incidence of breast cancer in the offspring depended not upon Mendelian rules but wholly upon whether the mother came from a high- or a low-cancer family. Only the mouse born from a "high-cancer mother" developed breast cancer in later life. Bittner had found that mice from the low-cancer strain would develop a high proportion of cancer if suckled from birth by high-cancer-strain mothers; conversely, mice from high-cancer mothers showed quite a low tumour incidence if fostered by mothers of low-cancer strain. It looked as though something affecting the occurrence of cancer in later life were transferred to the young in mothers' milk. But there were still stranger findings. If young mice of the low-cancer stock were suckled by high-cancer mothers and developed cancer later despite their hitherto unstained "family escutcheon," then, on inbreeding them, their children and grandchildren were also very liable to breast cancer. On the other hand, the young of the high-cancer stock which escaped the disease through being fostered by low-cancer mothers were able to pass on their freedom from cancer to their descendants. Dr. Andrewes added that Bittner had considered whether the agent transmitted in the milk might not be a hormone. "I can swallow some things, but it is hard to swallow a hormone which, when taken in infancy, will condemn your grandchildren to the development of cancer in their years of maturity." But on casting one's mind back to some instances of indigenous virus infections it was not too difficult to believe that Bittner's high-cancer mice were infected with an indigenous virus which normally remained quite latent, and ultimately a series of stimuli, perhaps acting over a long period, revealed its role as a causative agent of breast carcinoma.

Theory of "Toothless" Viruses

After mentioning other work Dr. Andrewes suggested that a virus might depend for its power to infect normal cells on some, possibly haptene-like, aggressive mechanism—"teeth," as it were—permitting an entry into the new cell. In certain circumstances a virus might perhaps lose its "teeth" by disuse atrophy, as armadillos and ant-eaters had done. One might imagine that this could happen most readily in the environment of the cancer cell, where virus could be carried on from cell to daughter and granddaughter cell as division was stimulated, and the need to come out of the cell to look for fresh prey would disappear. The virus which had become "toothless" by some such process could thus act as a proximate cause of cancer, and yet one would never be able to demonstrate its presence by injecting tumour extracts into fresh hosts. Roundabout methods of revealing them would always be necessary.

It was not very easy to reconcile the conception of a "toothless" virus in the cancer cell with the need for visualizing some possible means of carrying the virus over from one generation to the next. Complete "toothlessness" seemed to involve transmission through the germ plasm: relative "toothlessness" would allow a little more latitude. "Toothless" viruses need not be found only in cancers. Might not the viruses which, as some thought, must persist after infections and be responsible for keeping up a lifelong immunity be capable of being modified or made relatively "edentulous" instead of merely being masked by antibody?

He disagreed with the recent suggestion by Green that a cancer virus in a cancer cell was the highest conceivable form of parasitism, virus and cell having their division exactly synchronized—almost a virus–host hybridization. The perfect parasitism was rather the association of a latent indigenous virus and its host, neither doing any harm to the other. Such a compromise had probably evolved in more instances than were suspected. Cancer, when it occurred in animals, would then be due to the incursion of some unexpected factor—a *tertium quid*, which broke up the happy association; a disease affecting both partners, of advantage to neither. Instead of human cancer being considered as a disease of man caused by a virus it would then be necessary to consider it as a disease of the man–virus partnership. To sum up, the association of hosts and parasites, particularly viruses, might lead not to violent disease but to a certain "balance of power," which might at times be upset with the result that the disease occurred after all.

Discussion

In some discussion following the address, Dr. T. W. **Lumsden**, taking up one remark regarding breast carcinoma in mice, said that he did not gather when he saw Bittner, whose work Dr. Andrewes had quoted, that he claimed that if the mice with a low-cancer strain were suckled by a mother with a high-cancer strain there was any constant increase of cancer incidence in the young. He thought everyone agreed that the reverse was the case—there was no regularity at all.

Dr. **Andrewes** remarked that his own statements had been made on the basis of Bittner's published figures.

Dr. G. W. M. **Findlay** recalled a book by Dr. W. O. Stapledon, *Last and First Men*, in which he pictured the human race some millions of years hence being attacked by the Martians with masses of various particles which had the property of receiving and transmitting short- and long-wave radiations. A large part of the human population was thus killed off, and it was only when man managed to incorporate the various particles into himself, thus converting himself into a receiving and transmitting station, that he overcame the forces arrayed against him. That seemed an analogy on the physical plane for Dr. Andrewes's argument on the biological. Latent infection in yellow fever was extremely well seen in the African wild monkey; many of these animals were found to have immune bodies to yellow fever. It was well known that man could form reservoirs of latent herpes virus in very peculiar situations. A friend of his always got genital herpes on taking a Turkish bath. A girl now 8 years old, when she was 2½ fell down and grazed her palm; a bullous eruption formed, and ever since then, at intervals of three or four months, she had the same type of eruption, from which the herpes virus could be obtained. Psittacosis in parrots and budgerigars had been mentioned. This infection could apparently continue latent for a long time. Some years ago the wife of a well-known American became possessed of a parrot of which she was very fond. The bird was apparently in good health, but after eighteen months or two years the lady developed psittacosis, and it was then found that the parrot was excreting psittacosis virus in considerable amounts.

Mr. J. T. **Edwards** said that the conception which Dr. Andrewes had brought forward was not very difficult for those who practised veterinary medicine on domestic animals. It had long been recognized that neoplasms in fowls might be caused by filter-passers. Rinderpest in cattle could be transmitted to rabbits, causing merely a transient latent infection. Dr. Andrewes had quoted German workers (Waldmann, Trautwein, and Pyl) to the effect that the virus of foot-and-mouth disease could be detected in the urine of hyperimmunized cattle more than 200 days after recovery. The speaker was very sceptical about that statement. The fact was that the virus would not survive in the urine. The observation was more likely to be explained by an accidental infection. He referred in conclusion to the great difference between viruses; some were extremely difficult to kill, persisting for years in the laboratory, whereas others were very fragile. What was the cause of this difference? Was it not possible that in the case of mammalian cancers the virus was extremely fragile, and when released, perhaps by adsorption on the proteins of the host cells, it immediately became inactivated and not able to persist independently as in the case of avian agents?

Dr. Tom **Hare** was not sure whether Dr. Andrewes had suggested that in fowl paralysis (neurolymphatosis) the causative agent was a virus. Perhaps he had merely claimed that from the results obtained by certain workers it appeared that a virus was present. That view was certainly held by a number of workers in America and on the Continent as well as at Cambridge. But from his own work during the last five years he found it very difficult to recognize fowl paralysis other than as inherited as a Mendelian recessive. It might be possible that a virus had passed through the germ plasm, but it was extremely difficult to visualize that it would so pass in almost strictly Mendelian proportions. Again, where fowl paralysis was firmly established on a farm year after year one would expect some increased virulence of the virus so that there would be transmission to other "healthy" strains if in close contact—not solely in adult life, but from hatching onwards—with the fowl-paralysis-bearing strains.

Dr. J. H. Douglas **Webster** said that from a clinician's point of view one of the most striking characteristics of an established tumour was that it often showed periods of quiescence which alternated with periods of activity. The late Sir John Bland-Sutton used to say that in speaking of the progress of a growth "recurrence" was not the right term; it should be called "incomplete operation." But it was a question whether he was right. The operation might have been complete as regards the cell but not as regards the virus infection. He had found after a certain amount of study of the subject that cancer recurrences showed a certain periodicity almost exactly similar to that shown by influenza. The periodicity of influenza, which was a known virus disease, resembled closely that of malignant disease and of a number of benign tumours and leukaemia. There was no necessity to accept Dr. Andrewes's suggestion of a *tertium quid*. Here was a virus infection which went into hibernation, and then the virus, from some unknown intrinsic cause, started reproduction, and the patient had recurrences which, in his belief, came in periodical cycles. The only thing that he could say with regard to the *tertium quid* was that in one series of patients a few weeks after an influenza attack he had seen cancer recurrences and cancer primaries occur. The influenza was possibly the *tertium quid* which had stimulated the appearance of malignancy. In a few other instances he had found malignancy, primary and secondary, immediately after the cessation of menstruation, which suggested the possibility of a hormonal *tertium quid*.

Dr. **Andrewes** said that Dr. Hare had asked for an explanation of how a virus could be transmitted as a Mendelian character, particularly as a recessive character. He would prefer not to have to produce a hypothesis until he was confronted with the evidence. He thought that there was need for caution in accepting any suggestion that a cancer had a purely hereditary character, although it had undoubtedly hereditary characteristics.

Local News

ENGLAND AND WALES

Tuberculosis in Wales

Special interest attaches to the annual report of the King Edward VII Welsh National Memorial Association because it includes an excellent summary of the recommendations (which more particularly affect the association) of the Committee of Inquiry into the Anti-Tuberculosis Service in Wales and Monmouthshire. The report of this committee, which covered a much wider field than that originally fixed by the terms of reference, attracted considerable attention, and has already been noticed in these columns (*Journal*, March 18, 1939, p. 577). Those who find the original report too long for study would do well to read and digest Dr. D. A. Powell's summary. Commenting on the committee's findings, Dr. Powell points out that they confirmed the contention of the association that the failure of local authorities in many areas to carry out their statutory duties in the prevention of the disease was chiefly responsible for the fact that since 1915 the death rate from tuberculosis in Wales had not fallen as rapidly as in England and Scotland. "Because the patient (and naturally he looms large in the public eye) is the responsibility of the county," states Dr. Powell, "many sanitary authorities seem to assume that tuberculosis (a much bigger issue than the tuberculous) has very little, if anything, to do with them. The county council, on the other hand, has been too ready to act on the assumption that it is not quite the thing even to take an active interest in, and still less to interfere with, the work of the smaller authorities within its administrative area." This is all the more deplorable since "in virtue of their joint responsibility the county council and the Minister of Health have the power to supervise, augment, compel, financially penalize, or *supersede* the efforts of local authorities." Dr. Powell discusses the remedies, and emphasizes that the committee completely vindicated the association. The greater part of his report contains the usual statistical tables and references to the different dispensary areas and institutions, and illustrates the expanding work of the association limited by the special difficulties in Wales.

Tribute to a Yorkshire Doctor

Residents of South Milford, Yorkshire, on October 18 assembled at St. Mary's Church to pay tribute to the memory of Dr. A. H. Radcliffe, who lived in the village and died on February 7 after thirty-six years in practice there. A memorial tablet was unveiled by Mr. Harold Collinson, consulting surgeon to the General Infirmary at Leeds, who in a short address commemorated the life and qualities of Dr. Radcliffe. He said that in spite of all the activities of the Ministry of Health and of the public authorities the family practitioner still carried out the major proportion of the medical work of the nation—work which brought him into every household and made him not only an adviser but a valued friend. "He is the standard by which we doctors are measured, and the estimate of the profession in the eyes of the public is their estimate of him. The best doctor is often one of whom the public hears the least. He belongs to the great army of quiet workers, physicians and priests, sisters and nurses, of whom little is heard but to whom is given the ministry of consolation in sorrow, need, and sickness."

Correspondence

Gas Injuries to the Eye

SIR,—Mr. Arnold Sorsby (*Journal*, November 4, p. 927) does not know of experimental work to test whether irrigation with oil is efficient in treating damage to the cornea from liquid mustard gas. I can tell him that much research has been done for the German Army Medical Service, and the treatment is by means of a mixture of cod-liver oil and glucose. The cod-liver oil is emulsified with a little alkali (1 per cent. sodium carbonate). To 100 c.cm. of the mixture is added 4 c.cm. of pituitary (posterior lobe) extract. I do not know the proportion of glucose which is employed.

The use of cod-liver oil rather than olive oil is interesting in view of the value of cod-liver oil as a dressing for burns or infected skin wounds.

This formula for eye treatment has never been published.—I am, etc.,

J. H. BURN,
Oxford, Nov. 4. Professor of Pharmacology.

SIR,—The leading article in your issue of November 4 on the above subject rightly stresses mustard gas as the most important of the chemical warfare agents in producing eye injuries. There are, however, certain points in the consideration of the subject in this leading article which require comment.

First, the suggestion that the use of chlorinating agents will minimize the effect of a mustard-gas burn of the eye is not in accordance with experimental findings in my experience. The effect brought about by contamination of the eye is immediate, and no amelioration of the injury can result from irrigating with chlorinating agents or any other liquid. The mustard gas remains only momentarily in the eye; it is squeezed out by the lids and washed away by the tears. Irrigation will remove any unabsorbed liquid mustard gas which may be on the surrounding tissues, and will allay irritation, cleanse and relieve spasm, but it will not influence the damage which has already occurred to the tissues of the eye. Irrigation, it is suggested in the article in question, has some value by minimizing the cumulative action of the agent. While this contention is true in so far as skin lesions are concerned owing to the greater resistance of the integument, the argument is fallacious when applied to the ocular tissues. The damage to the delicate membrane of the eye is so rapid that even the immediate rush of tears, Nature's method of irrigation, will do no more than remove unabsorbed mustard gas.

Secondly, there would appear to be some confusion regarding the reason for the instillation of drops of castor oil or liquid paraffin. This procedure is criticized on the grounds that as these substances are solvents for this chemical warfare agent, the action of the gas will be disseminated. In actual practice this does not take place, as unabsorbed mustard gas will have been washed out of the eye by the tears before liquid paraffin or castor oil is introduced. It is argued that as greasy preparations in the treatment of mustard-gas injuries of the skin have not been found beneficial, a similar objection exists with regard to their application to the margins of the lids. While to a certain extent this may apply, the advantage gained by permitting free drainage from the eye, which follows their use, more than outweighs the possible intensification of the established injury to the margins of the lids.—I am, etc.,

War Office (A.M.D.7), Nov. 4. L. T. POOLE.

SIR,—Will you permit me to suggest the use of dielectric oil (which can be obtained from J. Bury, Ltd., 5, St. Ann Street, Manchester) in injuries to the eyes from liquid mustard or other poisonous gases. This oil is simply de-ionized petroleum, but it has some strange properties.

The late Mr. F. H. Bowman, D.Sc., the originator of this form of oil, explained that being dielectric it was absorbed very rapidly, and by surrounding the damaged nerve filaments with an insulating material it prevented the escape of the "neuro-electricity" which he said was responsible for inflammation and pain. Be this as it may, the fact remains that in burns, contusions of any kind, and even in acute pleurisy, the effect of the oil is little short of miraculous. I have used it in various eye troubles and have had some personal experience. Once when painting a fence with creosote a great splash of the creosote flew back into my right eye. I rushed into the house and thought my eye was destroyed, because in a mirror the only thing to be seen was a red ball unrecognizable as an eye. My first intention was to use a soda solution, but seeing a bottle of dielectric I filled my hand with the oil and inverted it over my eye. The pain, which had been intense, was relieved almost at once, and within a quarter of an hour the only sign of trouble left was some redness of the conjunctiva. Some years later I had an acute inflammation of one eye, due to a Koch-Weeks infection. As after some days of expert irrigation, it showed little sign of improvement, I had resort to dielectric oil and the trouble cleared up very rapidly.

As liquid mustard gas is oil-soluble, there is a greater probability that the dielectric would prove of use. At all events I am sure that it would remove pain more quickly and permanently than either cocaine or dionine.—I am, etc.,

London, W.1, Nov. 4. ALEXANDER FRANCIS.

Choice and Preparation of Blood Grouping Sera for Emergency Purposes

SIR,—I have read with interest the article by Drs. S. W. Challinor, J. C. J. Ives, and C. E. van Rooyen (*Journal*, October 28, p. 850), and would supplement the information given by them with certain observations that have been made on the large number of sera of Group A and Group B that have been studied since the formation of the Army Blood Transfusion Service.

The authors rightly draw attention to the fact that the size of agglutinated clumps is of value as a preliminary selective test, but the speed with which the agglutination occurs is of equal importance. The two features may be described as "avidity," and it is only those sera with marked avidity that are worthy of titration. Avidity and high titre are roughly parallel. The article mentions, but does not emphasize, that the titre is influenced by the agglutinogen content of the corpuscles under test. Fallacies arise if titrations are carried out with corpuscles whose sensitivity to agglutination is unknown. All difficulties are avoided if the titration test is expanded to include a control consisting of a standard reliable serum of known titre; this will indicate whether the test corpuscles are suitable.

The authors make no mention of the simple freezing method for concentrating serum which was described by O'Meara (*J. Path. Bact.*, 1933, **37**, 166). With this procedure sera which are reasonably avid and yet have a titre below 1 in 100 can be made use of.—I am, etc.,

Army Blood Supply Depot, Bristol, Nov. 2.
L. E. H. WHITBY, Colonel.

Storage and Use of Grouping Sera

SIR,—I expect others have thought of the following technique, but I have not seen it published.

The sera are stored in sterile vaccine bottles which are closed with a rubber cap. (The usual practice is to employ white glass for Group A and amber glass for Group B serum.) Each bottle is accompanied by the *shaft* of a serum needle, conveniently attached by two rubber bands; the shaft may be obtained by breaking off the shoulder, or when quantities are wanted the needle-tubing may be purchased and cut up. When a test is to be performed the needle-shaft is removed from under the rubber bands, sterilized in a flame, and allowed to cool, and the pointed end is plunged through the rubber cap for a few millimetres. The bottle is inverted, and gentle pressure is applied with the finger to the rubber cap to eject a drop of serum from the needle-shaft. This technique is equally useful whether one or a series of tests is to be performed. At the end of the sitting the needle-shaft is removed, washed through with water, and replaced under the rubber bands.

This simple procedure has a number of advantages. With ordinary care the bottles of serum remain uncontaminated for weeks or months. Packing of a complete outfit is reduced to a minimum. The manipulation required is no greater than in the case of sera sealed in glass capillaries, and it avoids the laborious process of filling and sealing dozens of capillaries. Teat pipettes are often used for delivering the sera from the bottles when many tests are to be done, but are clumsy; it is only too easy to knock over the little bottle when the pipette is in it, and there is always the risk of interchanging the A and B pipettes; the present method removes these difficulties. The wire loop used for adding the donor's blood to the grouping sera, and the needle for pricking the skin, may also be kept under the rubber bands.—I am, etc.,

Emergency Blood Supply Depot, Luton, Nov. 4.
G. A. HARRISON.

Treatment of Gas Gangrene

SIR,—The leading article on chemotherapy and infections of war in your issue of October 28 (p. 859) states that all wounds which appear likely to become the site of infection with gas gangrene should receive a prophylactic course of sulphonamide compounds at the earliest opportunity.

The heavy mortality of this condition is due, in part, to a late diagnosis. E. Dunbar Newell, in a paper on gas gangrene (*Ann. Surg.*, 1939, **110**, No. 1, 100), points out the great value of roentgenograms in showing the presence of gas bubbles in the tissues. The film enables very early diagnosis to be made in suspected cases, and is positive hours before the physical sign of crepitus. As early treatment of gas gangrene can give a mortality as low as 5 to 15 per cent. instead of the usual mortality of 49 to 80 per cent., the value of this special method of early detection would seem to be worth emphasizing at the present time. Rinehart was the first to call attention to the value of the roentgenogram in making a diagnosis before the infection is clinically apparent. In suspected cases the roentgenograms should be repeated every four hours. If there is a steady increase in the number of air bubbles in each succeeding film it may be concluded that they are not due to the inclusion of air in the wound.

The presence of gas may be due to colon bacillus infection or to surgical emphysema, but clinical features of the sudden onset of violent pain in the wound, an increase of volume of the limb, a sudden rise of pulse rate in relation to the temperature, and a general appearance of grave illness should help one to the correct decision. On inspection of the wound there is oedema, a brownish discoloration round the wound, and a brownish serous discharge. The wound has often a peculiar mousy "sweet-sour," offensive, or putrid odour, and the nurses may be able to report the presence of this. It is a very characteristic odour. Many lives may be saved by the early detection of this physical sign. In the actual treatment of cases of gas gangrene one depends upon the decompression of the parts by splitting the deep fascia on two sides of the limb, the excision of dead muscle masses, hydrogen peroxide irrigations, large magnesium sulphate soaks, strict immobilization and elevation of the limb, the use of 10,000 to 30,000 units of polyvalent serum intravenously at six-hourly intervals, and the use of sulphonamide. In desperate cases amputation has to be considered.

There is still another method of treatment reported upon very favourably by Kelly and Dowell, who refer to forty-four cases of gas gangrene of the extremities treated with *x* rays (*J. Amer. med. Ass.*, 1936, **107**, 1114). There were twenty-nine in which amputation was not performed, and all these cases recovered. Out of fifteen cases who had amputations, five patients died. Kelly concludes that *x* rays seem to be definitely established as an aid in the treatment of gas gangrene.

The prevention of gas gangrene would seem to depend upon early well-executed surgery to excise the wound carefully. Dead and devitalized tissues must be removed, especially crushed muscles with damaged blood supply. Foreign bodies are removed. Thereafter the limb has to be efficiently splinted in the elevated position and the wound kept thoroughly at rest. Some surgeons now favour complete fixation in a plaster casing, as reported upon so successfully by Trueta. In the presence of severe involvement of the blood vessels of the limb and of much destruction of muscles an amputation may be the best primary treatment. There is evidence to support the view that the prophylactic injection of gas-gangrene serum is of value in lengthening the incubation period and in lessening the severity of the attack.—I am, etc.,

Edinburgh, Oct. 30.
W. A. COCHRANE.

Radon Supplies

SIR,—The Radon Centre at the Middlesex Hospital has been transferred to quarters in Bedfordshire by the courtesy of the management of the Barton Lime Co., and supplies of radon will be available as from November 10. The expenses involved in the transfer of radium and plant and the equipment of the new quarters are being borne at present by the Medical Research Council and the British Empire Cancer Campaign.

The accommodation is being shared by the London Hospital, who are installing their radon plant there. Radon from 1½ grammes of radium will be available from this emergency centre. Should the demand for radon exceed the supply, it is probable that other former radon centres will join in the scheme, bringing in additional quantities of radium.

It is proposed to charge a flat rate of 1s. per millicurie, but it is recognized that for some forms of treatment radon at this rate may prove too expensive for many users. For example, the treatment of uterine cancer by the Stockholm technique would involve supplying 125 mcs. on three separate occasions. The use of 125 mcs. for twenty-two hours (first treatment) would utilize less than 20 per cent. of the radon supplied. This running to waste of 80 per cent. of the supply can to some extent be minimized by arranging that several cases are treated by means of the one supply. Certainly two and possibly three patients in series could adequately be dealt with, provided we can get collaboration to this end. If institutions would bear this in mind when requisitioning radon a great saving can be effected and many more patients can be treated. Platinum radon seeds will be charged at cost, but ordinary platinum screens and applicators will be lent free of charge.

Communications should be addressed to the Radon Centre, c/o Barton (Beds) Lime Co., Barton-in-the-Clay, Beds.—I am, etc.,

London, W.1, Nov. 6. Sidney Russ.

Treatment of Venereal Disease in the Field

Sir,—I have read with interest Lieutenant-Colonel E. T. Burke's letter in the *Journal* of November 4 (p. 928) concerning the treatment of venereal disease in the field. I agree with him that V.D. cases should preferably be treated by experienced venereologists. Mobile V.D. units would be the ideal. With modern methods of treatment there is now no need to keep the average case detached from the service unit as in the last war. The suggestion of using a preparation such as stabilarsan (already in solution) or "914" dissolved in sodium thiosulphate solution is excellent. Although I myself am always an advocate of the concurrent intermittent method of treatment for the early syphilitic, I believe that the excellent unit course suggested by Lieutenant-Colonel Burke could be simplified without loss of therapeutic effect.

May I suggest the following scheme for primary or secondary syphilis in the Services:

Unit Course

Week	Intravenous As ("914") (grammes)	Intramuscular Bismuth (grammes)
1 ..	0.45 followed four days later by 0.45	+ 0.24
2 ..	One injection of 0.6	+ One injection of 0.24
3 ..	,, ,, ,, 0.6	+ ,, ,, ,, 0.24
4 ..	,, ,, ,, 0.6	+ ,, ,, ,, 0.24
5 ..	,, ,, ,, 0.6	+ ,, ,, ,, 0.24
6 ..	,, ,, ,, 0.6	+ ,, ,, ,, 0.24
7 ..	,, ,, ,, 0.6	+ ,, ,, ,, 0.24
8 ..	,, ,, ,, 0.6	+ ,, ,, ,, 0.24
9 ..	,, ,, ,, 0.6	+ ,, ,, ,, 0.24
10 ..	,, ,, ,, 0.6	+ ,, ,, ,, 0.24
Total..	.. 6.3	+ 2.4

Each unit course to be repeated after an interval of one month, and a total of at least four courses to be given.

Serological tests should be made every three months throughout the year following the fourth course.

Finally a cerebrospinal fluid test.

I know the results of such a scheme to be a 100 per cent. cure rate; and here the patient is not subjected to five injections a week, but receives three in the first week and two in each of the following nine weeks.—I am, etc.,

C. Hamilton Wilkie,
Director of V.D. Services, Leicester Royal Infirmary.

Nov. 6.

Immunization of School Children

Sir,—One of the endless problems connected with the evacuation of children from big towns into country districts is that of the relative suspension of the school medical service. No doubt those to whom the care of the health of the child population of this country is entrusted are fully aware of the possible consequences of this situation. It is of course essential that the progress that has been achieved in social medicine should not be allowed to deteriorate even under the stress of war, but it is also essential that urgent measures which promised to come to fruition before the outbreak of hostilities should not be altogether dropped. This is particularly important when such measures have become all the more necessary owing to the present abnormal conditions. Diphtheria immunization of children is a case in point. It has been repeatedly pointed out, and Sir John Ledingham emphasizes the issue in his survey published in the *Journal* of October 28 (p. 841), that diphtheria immunization in this country is on a lamentably low level. A diphtheria epidemic among children at the present moment would threaten a heavy toll owing to the disorganization of the ordinary routine of child life and the ordinary facilities of isolation and treatment. In a letter in your columns published a fortnight before the outbreak of the war (*Supplement*, August 19, p. 153) I urged the need for a more intensive effort towards diphtheria immunization as a preparatory measure of national defence. Now that the situation that was feared has developed it is to be hoped that the responsible authorities are not losing sight of this life-saving measure. It is sincerely to be hoped that it will not be necessary for a calamity to emphasize the obvious need for this procedure.

Another problem which may become a matter of immediate urgency before long is an epidemic of measles among children bred in town and now living under conditions abnormal to them. A measles epidemic is indeed to be expected this year, and the possibility of severe respiratory complications among the evacuated children has to be considered. It is true that immune serum is not yet a perfected method for the treatment of measles, but its value is not doubted. Is it beyond the possibility of the organization of child life in the reception areas to have facilities available for the supply of such serum at short notice should the occasion arise when it has to be used?—I am, etc.,

London, E.5, Nov. 5. Max Sorsby.

Colles's Fracture and Traumatic Oedema

Sir,—The clinical memorandum by Mr. R. Salisbury Woods in the *Journal* of October 14 (p. 767) describing a case of Colles's fracture occurring together with a dislocated elbow in the same patient once again brings before surgeons and masseuses the problem of traumatic oedema. Some years ago one used frequently to see cases of a completely stiff trophic hand following some trivial crush injury which fractured some metacarpals or phalanges. But thanks to the teaching of Böhler as regards early movement of the distal joints after a fracture such cases are fewer. Once such a condition sets in massage and stretching do more harm than good. Yet these are often carried out by masseuses who ought now to know better.

I recently dealt with a typical case of acute traumatic oedema which should never have been allowed to occur. A man sustained a simple Colles's fracture; this was correctly set and put in plaster at a hospital. During the first week he complained of tightness and swelling, but the casualty sister gave him some aspirin, and at the end of a week he was seen by a visiting surgeon. The wrist was taken out of plaster and put on a Carr's splint; massage was advised. This he had privately, and for a month the masseuse massaged and stretched the fingers and wrist. I saw him at the end of two months, when by now the fingers were practically stiff in a semi-flexed position, the wrist had no movement at all, and the circulation was poor, the skin being blue and shiny—a typical neurotrophic hand. I put the hand at rest, giving him daily wax and infra-red and contrast baths. At the end of a further fortnight the circulation was back to normal and the fingers were loosening spontaneously. Faradic arm baths and active movements such as dummy piano-playing were started. When movements were better manipulation of the wrist was carried out, after which normal recovery of the hand and wrist quickly took place. The earlier treatment indicates the abuse of massage and the failure of that masseuse to understand the physiology of the vasomotor system in fractures, and its readiness to pour out the binding traumatic oedema. This physiological problem is dealt with very lucidly by Mr. Eldon Tucker in his book on injuries.

Any patient with a Colles's fracture must be made to carry out finger exercises on the first few days after reduction of the fracture. There are, however, cases, usually in women, where the circulation appears sluggish and swelling of the fingers outside the plaster persists, even though the plaster be a split one. These cases are ones of vasomotor paralysis (see article by Turner on neurotrophic disturbances after Colles's fracture, *J. Bone Jt. Surg.*, January, 1931), and are likely to give trouble with stiffness unless special care about active movements be carried out from the first.—I am, etc.,

London, W.1, Oct. 25. G. O. Tippett.

Varicosities of Veins

SIR,—Mr. J. B. Oldham's letter (*Journal*, October 28, p. 885) gives facts of first-class importance about the risk of ligating the internal saphenous vein at the saphenous opening in the presumably ambulatory patient. The operation appears to be safe and is known to be very suitable for obliterating the superior reflux when the valves are incompetent, as in a Trendelenburg-positive case. Would that we could control the inferior or muscular reflux as easily. The anastomoses of the superficial epigastric, circumflex iliac, and external pudic veins are of no importance in the average case of varicosity. When they become thrombosed after an ascending injection, given by the empty-vein method with elevation of the limb, recurrence may still take place. The choice of operation now lies with the most certain surface marking. The difficulty of finding the vein lower down in its course in a fat subject is sometimes considerable.

The late Sir Henry Gray in 1909 introduced an important modification of Babcock's extraction operation and used to demonstrate that the saphenous vein could generally be felt in the wound in cases of difficulty if the limb were abducted. He also showed that the smallest knob used on his extractor when passed from above downwards would stick at the valves when Trendelenburg's sign was negative, and he then passed it from below. It occurs to me that the larger knob on the distal end would be useful to draw up the sclerosing fluid after the upper part of the vein had been tied. But is suction really necessary when any guidable solution, such as sodium salicylate, is employed? By utilizing the pain as a guide one can generally ensure that the solution enters any required areas (see *British Medical Journal* of November 9, 1929). When morrhuate or other nearly painless injection is used Mr. Oldham's method with a ureteric catheter is likely to be a permanent addition to the technique. As the pain caused by salicylate, saline, and some other solutions is a delayed one, the transit of the catheter would have to be fairly rapid or the pain would be too prolonged to be bearable.

It has been the experience of many that 30 per cent. salicylate in the absence of saphenous ligation is often insufficient to produce thrombosis, whereas 40 per cent. is enough. A condition of the vein refractory to thrombosis arises (see *Lancet* of August 8, 1931). A similar condition is figured in the *British Medical Journal* of July 13, 1935. For such types ligation of the saphena combined with injection is indicated. But one cannot as yet predict that this condition will arise. It seems to me that the obvious course will be to inject first from below upwards by the empty-vein method so as to flood the whole available area if possible and then to tie and divide the vein high up. Judging by former three-year results ligation will seldom be required. The variables are so numerous and classification so difficult that it is not yet possible to say that any one method or solution should have the preference.—I am, etc.,

London, W.1, Oct. 31. G. H. COLT.

Procaine or Percaine?

SIR,—As medical adviser to the manufacturers of percaine I attended the inquest reported in the *British Medical Journal* of October 28 under the heading "Procaine or Percaine?" The suggestion that "the most important factor was the similarity of the two names" is untenable, since the medical witness testified that (*a*) he knew that percaine and procaine were not the same drugs, (*b*) he read the words "Percaine 2 per cent. solution" on the bottle, (*c*) he referred to the manufacturers' price list in order to ascertain whether percaine 2 per cent. solution was suitable for injection, and read the words "exclusively for surface anaesthesia" in the specification of this solution.

There was, in fact, no suggestion that percaine was administered to the deceased in the mistaken belief that it was procaine. The alleged confusion between the two names (the doctor stated that he had verbally ordered procaine, while the dispenser stated that percaine had been ordered) is relevant only to the events preceding the opening of the package by the doctor. It was not the "vital distinction between the two names" that the doctor failed to appreciate, but the vital distinction between the appropriate concentrations of two substances known to be different.

The statements that "procaine . . . may be sold to a lay purchaser without restriction or record" and that the chemists were "within the law in dispensing percaine on a doctor's verbal order" if they made an entry in the prescription book are both incorrect. Procaine and percaine are both First Schedule poisons with the qualification that procaine solutions of less than 10 per cent. are exempted. A dispenser is not entitled to supply a First Schedule poison on a doctor's verbal order unless he is (*a*) satisfied that there is an emergency, and (*b*) secures an undertaking from the doctor that he will supply a written order or attend personally to sign the Poisons Book within twenty-four hours. The percaine solution was therefore improperly dispensed in this case, although it is plainly indicated in the manufacturers' price list that it is a First Schedule poison.

Accidents must be expected if poisons are dispensed and administered with a disregard of their conditions of sale and administration, and to attribute such accidents to a similarity of names when all parties concerned knew that the two names represented two different compounds is an argument which I cannot follow. It is evident from the fact that procaine, ethocaine, allocaine, syncaine, kerocaine, neocaine, novocain, and planocaine refer to an identical substance that no mere dissimilarity of terminology could serve to indicate a difference of dosage. Percaine was introduced and had become well known and widely used under that name during the three years before the official adoption of procaine—a name which was almost unknown in this country and has not yet attained general currency. A simultaneous change in the names of two well-known local anaesthetics might well have caused considerable confusion, and the manufacturers felt that it would be desirable that at least one of these drugs should retain the name under which it had become well established.—I am, etc.,

The Laboratories, Horsham, Nov. 2. N. HOWARD JONES.

⁂ The report might with advantage have referred to "2 per cent. procaine" instead of to "procaine" in the phrase challenged. It is, however, clear that what is referred to throughout the report is not procaine itself but a 2 per cent. solution, and it is the law that such a solution may be sold without a record having to be kept by the seller. In his principal challenge Dr. Howard Jones correctly summarizes the conditions in which—under Section 18 (2) of the Pharmacy and Poisons Act, 1933, as applied to Section 20 by Rule 7 of the Poisons Rules, 1935—poisons in the First Schedule of the Rules may be supplied to a medical practitioner. But he overlooks the alternative method provided by Section 19 of recording the supply as a prescription in the prescription book. It was to this method that the report referred and it appears to have been the method properly adopted by the chemist.—ED., *B.M.J.*

"Foreign Pharmaceutical Products"

SIR,—The schedule of pharmaceutical specialties published in your issue of October 28 was prepared as a war measure by the Association of British Chemical Manufacturers with the express object of advising the medical profession of British sources of supply for products available in replacement of preparations which were understood to be foreign products and of which supplies might prove difficult to obtain through pre-war channels. The schedule had, therefore, to be completed quickly under the stress of war conditions. The Association included in the schedule all proprietaries which it was advised were foreign products. Despite its care to have the list as accurate and complete as possible, it is regretted that a few inaccuracies have occurred, and for these the Association tenders its sincere apologies to you and to the firms concerned.

The Association is glad to be able to report that it has now been advised by the following firms—non-members of the Association—that the products shown below against their names are in fact made in this country and should therefore be deleted from the list of foreign products:

Firm	*Product*
Ciba Ltd.	Dial tablets
Denver Chemical Manufacturing Co.	Antiphlogistine
Menley and James Ltd.	Calsoid
Modern Pharmacals Ltd.	Sulfarsenol
H. R. Napp Ltd.	Fiatal Raminal Somnosal
Gedeon Richter (Great Britain) Ltd.	Aurobin Kalmopyrin
Roche Products Ltd.	Digalen Larostidin Omnopon
William R. Warner Ltd.	Anusol Veganin.

A revised edition of the schedule is now being prepared and will be available for issue (gratis), both in replacement of the copies already distributed and for new inquirers, in the week commencing November 13. This edition will take into account the above amendments and such other omissions and additions as have already been brought to our notice. You have already been good enough to indicate a number of these in the annotation in the issue of November 4. As indicated in the foreword to the present edition, the Association will at all times welcome observations and suggestions which will enhance the accuracy and scope of the publication, and any amendments which these may necessitate will be made in subsequent editions.—I am, etc.,

166, Piccadilly, W.,
Nov. 6.

J. DAVIDSON PRATT,
General Manager, Association of British Chemical Manufacturers.

Personal Hygiene in Syllabuses of Training Colleges

SIR,—In a letter which appeared in the *Journal* of October 14 (p. 785) Dr. Octavia Lewin states: "It is well known that personal hygiene is not on the syllabus of the training colleges. It is easy to understand, therefore, why it is not in the curricula of the schools." This statement is directly contrary to the facts. Hygiene is a compulsory subject in the training colleges, and the syllabuses in use at those colleges are submitted to the Board of Education for their approval. These syllabuses, of course, include personal hygiene. Moreover, the Board's *Handbook of Suggestions on Health Education*, on which indeed some of the syllabuses are based, and which deals specially with personal hygiene, is increasingly used in the training colleges by students and lecturers alike.—I am, etc.,

Board of Education, Nov. 3.

A. R. AINSWORTH.

Peter Camper

SIR,—Your interesting note on Peter Camper under "Nova et Vetera" (October 28, p. 867) would suggest that the distinguished Dutchman was primarily an exponent of "midwifery and the diseases of women," as those subjects were designated in the times in which he lived, and lived lustily, as the secrets of his diary divulge! But surely his name goes down to posterity as an anatomist at least first, and perhaps foremost. Have we not all been hard put to it to remember whether the fascia in the inguinal region which goes by his name was really the superficial or the deep sheet, both being eponymous? Garrison credits him with discovering the processus vaginalis of the peritoneum and the fibrous structure of the lens, and he certainly wrote a treatise on hernia. But in the old days the study of anatomy and the practice of obstetrics often went hand in hand, as witness the fame in both fields of James Douglas and his pouch and William Hunter and the monumental *Anatomy of the Human Gravid Uterus*.—I am, etc.,

British Postgraduate Medical School, Oct. 31.

G. GREY TURNER.

Biography of Harvey Cushing

SIR,—Mrs. Cushing has requested me to prepare a biography of her husband, and I should be most grateful to anyone who wishes to make letters, anecdotes, or other memorabilia available. Copies of all letters, no matter how brief, are desired, and if dates are omitted it is hoped that, when possible, these may be supplied (for example, from the postmark). If original letters or other documents are submitted they will be copied and returned promptly.

A new medical library building is being erected at the Yale University School of Medicine to receive Dr. Cushing's library and collections, including his letters, diaries, and manuscripts. Any of his friends who wish, now or later, to present correspondence, photographs, or other memorabilia for permanent preservation among the Cushing papers will receive the appreciative thanks of the University.—I am, etc.,

JOHN F. FULTON, M.D.

Yale University School of Medicine,
333, Cedar Street, New Haven,
Conn., Oct. 16.

R.M.B.F. Christmas Gifts

SIR,—Many members of the profession have most generously supported the appeal made each year for donations towards the Christmas Gift fund of the Royal Medical Benevolent Fund. In the years of peace this special work of ours in bringing extra comfort and pleasures on Christmas Day into the homes of old people directly connected with our profession has obviously appealed to the hearts and sympathy of many of your readers.

In this year of war may I through you, Sir, ask the question —Is the Fund to give its usual gift at Christmas, 1939, or are these old people to receive nothing at a time when they may be suffering from greater privations and difficulties? I am very confident that the reply will be that this is not the year to withhold the gift which means so much happiness and brings such pleasure to many old and infirm people. I invite those who can contribute to send donations to the Royal Medical Benevolent Fund, Christmas Gift Account, Wormingford, Essex. Although many members of our profession have been hard hit, yet I have every hope that the response will be a generous one.—I am, etc.,

THOS. BARLOW,
President.

Nov. 1.

Obituary

DR. DAVID ALEXANDER MCCURDY, formerly of Derry, died at the Derry City and County Hospital on September 27 after an illness lasting more than thirteen years. Born in County Donegal nearly eighty-three years ago, he received his medical education at Trinity College, Dublin, and the Royal College of Surgeons in Ireland. In 1891 he qualified L.R.C.P.I. and L.M., with the special certificate in gynaecology from the Rotunda Hospital. He held for some time the post of resident surgeon to the Royal City of Dublin Hospital, and was elected F.R.C.S.I. in 1899. He had a large practice in Derry, and was the Board of Trade medical officer for that city as well as the medical representative there of the American emigration authorities. He was on board the Anchor liner *Columbia* on the historic passage when it had its bows stove in by an iceberg, but nevertheless reached its destination, New York, after three days of risk and adventure. Dr. McCurdy was widely popular in Derry, being associated with social and philanthropic activities, and highly esteemed by colleagues and patients. He joined the British Medical Association in 1892, remaining a member for thirty-five years. More than thirteen years ago he was incapacitated by a stroke, and during the last five years he had been living in Sheffield with his married daughter, returning to Derry only five weeks before his death.

Universities and Colleges

UNIVERSITY OF OXFORD

In Congregation on October 31 Sir Farquhar Buzzard, Regius Professor of Medicine, introducing two decrees, said that Professor G. R. Girdlestone, Nuffield Professor of Orthopaedic Surgery, has felt compelled to resign from his chair because of the great pressure of his clinical work. He is also resigning from the honorary clinical directorship of the Wingfield-Morris Orthopaedic Hospital because he feels that the professor should have the supervision and control of the clinical work of that hospital. Professor Girdlestone is not resigning from his appointment of honorary surgeon to the Wingfield-Morris Orthopaedic Hospital or that of honorary orthopaedic surgeon to the Radcliffe Infirmary. A decree providing for the appointment of the Nuffield Professor of Orthopaedic Surgery at £1,200 a year was approved. Hitherto it has been an honorary appointment. The new professor will not be permitted to engage in private practice for personal gain, but as clinical director of the Wingfield-Morris Hospital he will receive an additional stipend of £600 a year.

The time-table of the examinations for the degrees of B.M. and B.Ch. in the Michaelmas term, 1939, has been revised as follows: First examination, December 11, 12, 13, 15, 16, 18, and 19; second examination, December 6, 7, 8, 9, 11, 13, 14, 15, 16, and 18.

UNIVERSITY OF CAMBRIDGE

At a Congregation on November 4 the following medical degrees were conferred:

M.D.—*G. D. Hadley.

M.B., B.CHIR.—W. H. S. St. John-Brooks, H. Curtis, J. S. H. Wade, G. C. Smith.

*By proxy.

UNIVERSITY OF EDINBURGH

Sir John Donald Pollock, Bt., M.D., LL.D.Ed., Hon. D.Sc. Oxon., has been elected Rector of Edinburgh University. Sir John Pollock controls large business interests and has made many philanthropic gifts. He is a member of the executive committee of the Carnegie Trust for the Universities of Scotland and holds the honorary ranks of Colonel R.A.O.C., Surgeon Commander R.N.V.R., and Wing-Commander R.A.F.V.R. In the last New Year's Honours List a baronetcy was conferred upon him for benefactions and services to education.

QUEEN'S UNIVERSITY, BELFAST

War Service by Graduates

Queen's O.T.C. has been active in dealing with applications for commissions in the various Forces, and the Vice-Chancellor is anxious that all Queensmen and Queenswomen who have joined any branch of the Forces or the auxiliary services, or are engaged in any form of national service, should communicate with the secretary at the University to inform him of (1) the period during which they were in residence, (2) the date of their enlistment or enrolment, and (3) the branch of the Services which they have joined. The University authorities, aware of the difficulty experienced in the last war, are anxious to take steps at the present stage to secure a complete record of the war services of graduates.

The following candidates have been approved at the examination indicated:

M.B., B.CH., B.A.O.—Patricia K. Allan, T. T. Baird, A. F. Barr, P. J. Blaney, R. Calwell, R. H. Clarke, D. T. Crozier-Ritchie, A. F. Ferguson, R. F. Forbes, R. J. A. Heron, S. M. B. Hill, W. G. Jackson, C. Kelly, T. M. Kelly, W. N. M. F. Kelly, R. H. Kennedy, T. M. Lennox, J. Lillie, J. G. McAviney, J. M. McAviney, S. J. McClatchley, J. H. McIlrath, R. A. M. McVicker, D. Mitchell, T. E. Moody, C. J. K. Orr, R. Reid, A. W. W. Robinson, F. E. Scott, W. R. D. Seymour, T. B. Smiley.

CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the requisite examinations, have been admitted L.R.C.P.Ed., L.R.C.S.Ed., L.R.F.P. and S.Glas.:

L. Abel, J. D. Addison, M. Ashpis, Elizabeth N. G. Baker, L. A. Bornstein, R. P. Boyd, A. Bleecker, J. C. L. Cameron, C. M. Chambers, A. D. Chisholm, G. A. M. Cowie, H. Cohen, S. D. Cudjoe, R. Dalrymple, I. Diamond, C. C. B. Doherty, H. Du T. Du Toit, O. Eisert, E. Emma, Ll. G. Ermshar, A. Fink, M. C. K. Finlayson, S. Fox, L. Gitman, A. Glassman, L. L. Goldberg, M. M. Goldenkranz, S. Gudis, G. R. Jones, A. I. Kaplan, L. A. Kaplan, E. W. Langs, R. B. Lenora, I. Levinson, M. McAlley, S. N. Mandel, M. Mariaskin, R. J. Mehr, A. Michelson, Jean Middlemiss, R. A. Morrison, J. Morton, R. S. Morton, J. H. Murray, M. N. A. Nasir, W. C. Pilgrim, E. Pravda, H. M. Pretorius, M. R. Rapoport, S. W. Rubin, T. Russell, D. R. Sandison, K. S. Seal, D. McG. Simpson, L. Singer, D. R. Skudowitz, T. M. Small, G. Smith, C. B. Storch, A. M. Tawfic, M. H. Tischler, E. M. Webster, A. Weiss.

The following graduates of recognized foreign universities were also admitted licentiates:

J. Adler, E. J. Billigheimer, J. Brand, K. F. Hirsch, E. Horowitz, R. Hurwitz, E. Schleyer, W. T. Strauss, R. Treu, A. Vogl, W. Worms.

Medical Notes in Parliament

This week the House of Commons approved a resolution to authorize the introduction of a National Loans Bill. Statements were expected from Mr. Chamberlain and Mr. Churchill on conditions of peace and the progress of the war.

The Chartered and Other Bodies (Temporary Provisions) Bill was introduced by the Lord Chancellor in the House of Lords on November 1. Its purpose is to promote economy and efficiency in the carrying on under war conditions of the work of certain chartered and other bodies, and to enable certain universities and colleges to adapt themselves to war conditions. The Bill was read a second time on November 7.

Evacuation Problems

A debate on the problems of evacuation was opened in the House of Lords on November 1 by the BISHOP OF WINCHESTER. A large number of mothers had returned to the towns, but the evacuated children were happy and were gaining in health. Very often the hosts, too, were happy, but a large number of people had been prejudiced against receiving children because some of them had left the towns with skin diseases or were infected. Such children should be sent to special hostels or camps whence, after a few days, they could, with a medical certificate, be sent on to a private house. The ARCHBISHOP OF CANTERBURY said there was urgent need for the medical officers of health throughout the country to provide special hospitals or "sick bays" in separate houses to which children who were ill or infected could be removed.

LORD DAWSON said the evacuation of children could not be more than partial, but the policy of evacuation must not be abandoned. About 250,000 children had been evacuated from London and had not returned. An equal number remained in London and were drifting about the streets. Provision must be made for the education and health of the latter, although welfare and hospital services had been reduced to skeleton services, babies were not looked after as in peace, and school medical services worked at half-speed. They could not afford to keep closed any longer the big hospitals which were the key and inspiration of medical thought. Any week now they might get the winter diseases and the height of the cycle of measles, with which they might get diphtheria. If the big hospitals were closed patients with early disease would be left at home, their condition neither diagnosed nor treated. There was danger, too, in the country districts, where an outbreak of severe influenza might occur in the overcrowded communities of the reception areas. They should remember that the power of resistance of the community was lower than in peace. He would without hesitation open the big hospitals in London, reserving one-third of each for casualties. If there were special facilities for evacuating into a hospital near by—not difficult to arrange—his proposition was quite practicable. Yet they went on from week to week and nothing happened. The big hospitals were pools of silence. The effect of removing for any length of time the normal services from 8,000,000 people in London would inflict more suffering than the dangers envisaged from air attack. This did not imply criticism of the Emergency Medical Service, which, under its Director-General, had done wonderful work. Besides reopening the big hospitals, medical education should be restored and the training of nurses resumed. The harm which was being done to the institutions was continuous, ubiquitous, and certain. Each profession should do the work which belonged to it in the place where it should rightly be done.

Earl **DE LA WARR** said the evacuation scheme was prepared on the assumption that on the declaration of war London and the other great towns would be subject to heavy bombing. It was now being judged by peace standards. The Government was reopening schools in the evacuation areas because 750,000 children could not be left without education and medical care, but it appealed to parents to leave in the reception areas the children who were there.

The debate then closed.

DISCUSSION IN THE COMMONS

Evacuation was also discussed by the House of Commons on November 2. Mr. **EDE** opened the debate.

Dr. **ELLIOT** said the actual movement covered 1,400,000 persons in England and Scotland. They were: 750,000 unaccompanied children, 542,000 mothers and young children, 12,000 expectant mothers, and 77,000 others. These one and a half million people, mainly children, were entrained, moved fifty to one hundred miles, detrained, fed, and re-accommodated in the space of four days without a single casualty. Inquiries from receiving authorities and from the large cities covering nearly three-fifths of all the evacuated school children showed that, speaking broadly, about 50 per cent. of the mothers and others who were evacuated and about 78 per cent. of the unaccompanied school children were still in the reception areas. Returns of the incidence of infectious diseases in the reception areas for the first two months since the outbreak of war showed there had been no increase; indeed, the figures for the "fevers" were actually lower than for the corresponding period of 1938. It had been a sunny, healthy autumn, and these figures must be considered with due reserve.

INCIDENCE OF "FEVERS" SINCE EVACUATION

Dr. Elliot gave the following figures of the total number of cases of diphtheria, enteric fever, pneumonia, cerebrospinal fever, and poliomyelitis in Great Britain.

Disease	Seven weeks to October 21	
	1938	1939
Diphtheria	9,960	7,637
Enteric fever	284	437
Pneumonia	4,365	3,268
Cerebrospinal fever	141	177
Poliomyelitis	544	267

For enteric fever—that is, typhoid—they got a striking result. In England and Wales there were sixty-two notifications in the week before evacuation began and seventy-seven in the week in which it actually started, as against forty-seven and thirty-two in the corresponding weeks of 1938. In the last two weeks for which we had figures they were forty-two for the evacuation year and thirty-two for last year (October 14) and thirty-one for the evacuation year as against thirty-six for last year in the last week—that ending October 21. As regards maternity cases, to move nearly 12,000 expectant mothers, still more to carry through childbirth with scratch nursing personnel and improvised accommodation, was an anxious task. In the 165 or so maternity homes, comprising 4,500 beds, which were improvised in the reception areas in Great Britain, over 3,500 confinements took place in the first six weeks of war. The proportion of complicated cases was no higher than normal. The incidence of puerperal fever and puerperal pyrexia up to the week ending October 21 showed no increase over 1938.

Circulars issued at the beginning of last month authorized the provision of accommodation in separate houses for children suffering from minor illnesses or convalescent from more serious illnesses who could not properly be cared for in their billets. Where the receiving district authority agreed, the county council would provide and maintain the sick bay. In making arrangements of this kind each case of minor illness should be admitted only on the recommendation of a medical practitioner. The practitioner should continue to attend regularly at the sick bay, and the staff should include at least one trained nurse. For an evacuated population of some 383,000, about 800 beds were being provided for non-notifiable infectious diseases and another 800 beds for minor illnesses. If the same proportion applied throughout the whole country, something like 2,500 beds had been provided for non-notifiable infectious diseases and about the same number for cases of minor illness. Measles and whooping-cough had been made compulsorily notifiable. Local authorities would know at once wherever an epidemic threatened and be able to take measures promptly.

In co-operation with the Central Medical War Committee arrangements had been made for the domiciliary treatment by general practitioners of unaccompanied school children in the reception areas. The treatment would be given to every child in need of it without charge to the householder. The practitioner would look for payment to the Government and not to the local authority. The cost worked out at slightly over 2d. a week—equivalent to about £250,000. A figure of 5,000 beds for children's illnesses and £250,000 for a children's medical service showed the scale of the scheme. The beds in the emergency hospital scheme would be available if needed to deal with calls for extra beds for cases which existing infectious diseases hospitals were not capable of accommodating.

HEALTH SERVICES IN RECEPTION AREAS

Dr. **HADEN GUEST** said there was urgent need in the reception areas for improved school medical and nursing services, clinics, and inspection of children. At the outbreak of war medical officers of health became heads of the casualty medical services in their districts. Public health nurses went to first-aid posts, mobile units, and other services of that kind. In many places 80 per cent. of the nurses left their ordinary public health duties. That wasted the capacities of women trained for public health duties and specially for school work. If all these nurses were withdrawn from first-aid posts and allied services they could be replaced from the civil nursing reserve. The medical and clinic services in the towns should be reopened. For these the Ministry must take some of the nurses from their present work. There were sufficient doctors to staff the public health services in the reception areas and to do the medical work required, as well as meeting the need for doctors in the casualty services. Those not required in the towns could be lent from the evacuation authorities to the reception authorities. The Minister should give a plain instruction to this effect.

Sir **RALPH GLYN** said he knew the immobilization of the great London hospitals and of many doctors was engaging the attention of Dr. Elliot. Doctors, who now were acquainted with their war stations, should have terms offered which enabled them to get on with their ordinary work, especially as consultants Unless specialists were attracted to give part-time services the London hospitals could not do the work they should do. The number of beds which these hospitals were allowed would be inadequate if there happened to be an epidemic of influenza. In the last war doctors were enabled to continue their ordinary work once they had learnt their war stations. For the medical care of children evacuated to reception areas mobile clinics could go round and treat throat and ear ailments and the like.

Sir **FRANCIS FREMANTLE** referred to the notification of measles and whooping-cough. Notification of a disease should imply means of dealing with it by nursing or isolation. The Ministry hoped to provide isolation in the new hutment hospitals, but in Sir Francis's part of the country it would be impossible to isolate an epidemic of whooping-cough or measles. To keep the children in reception areas safe and sound during the winter months the district nurses should be given special help. More use should be made of the county nursing associations and of the Queen's Institute of District Nursing, and arrangements should be made for the evacuating authorities to send nursing relief. Mr. HERBERT MORRISON reported difficulty with hospital supplies. The Surgical Instrument Makers' Association had agreed that 90 per cent. of their output should be allocated to the War Office for military purposes. How the voluntary and municipal hospitals would get their share out of the remaining 10 per cent. he did not know. Mr. Morrison mentioned that midwives and nurses, both for school nursing work and fever nursing, had been sent from London to the reception areas. He had an impression of lack of co-ordination within the Ministry of Health. In the Hospital Branch the officers hung on to their doctors and nurses in the casualty and base hospitals. Doctors and nurses should be allowed to go to the reception areas if their services were needed there.

Sir JOHN ANDERSON replied to the debate.

Mr. KENNETH LINDSAY announced on November 1 a decision that schools in evacuation areas which could be made available should be reopened for the education of children whose parents desired them to attend.

Reservation of Medical Students

Sir ERNEST GRAHAM-LITTLE suggested on October 26 that Mr. Ernest Brown should arrange with Mr. Hore-Belisha to reserve for military service, until after qualification, all medical students at present registered, irrespective of the stage of their studies. Mr. BROWN replied that he had consulted Dr. Elliot and was satisfied that at present the reservation of medical students who had passed the first professional examination and completed two terms of study in anatomy and physiology was adequate to meet the needs of the situation.

Petrol for Doctors

Mr. GEOFFREY LLOYD replied on November 1 to a question which asked if he knew of the difficulties experienced by doctors in some areas as regards obtaining necessary supplies of petrol, and why his Department had refused to investigate individual complaints. Mr. Lloyd said special arrangements were recently made for dealing with applications from doctors for supplementary allowances of petrol. Cases of difficulty which arose were being dealt with by the Divisional Petroleum Officers in consultation with the liaison officers appointed by the British Medical Association.

Facilities for Short-wave Therapy

Sir ERNEST GRAHAM-LITTLE asked on November 1 whether attention had been drawn to the value of short-wave therapy in the relief of pain, the healing of infected wounds, and the rapid restoration of function to maimed and injured limbs, as well as in the treatment of lung affections, especially those following gas attacks. He also asked how many of the machines required for this treatment were available in the military hospitals and what provision had been made for skilled personnel to use them. Miss HORSBRUGH replied that she knew the value of this form of treatment for the types of cases mentioned. She could not give the number of machines or of skilled personnel, but full use would be made of the plant available. This was widely distributed through the general hospitals designated for the treatment of casualties. In allocating personnel to these hospitals due provision had been made for radiological staff and radiographers.

Medical Practitioners' Enlistment

Mr. GROVES put a question on November 2 alleging dissatisfaction among members of the medical profession arising from the fact that many medical men making application for commissions in the Services had been referred to a voluntary organization of medical men to which they did not belong and to which they had no desire to make application. He asked Dr. Elliot to consider consultation with the Medical Practitioners' Union in order that its view could be presented side by side with that of the British Medical Association. Dr ELLIOT said he had no reason to believe that the medical profession in general was dissatisfied with the arrangements made by the Central Medical War Committee for the supply of doctors to the Forces. He accepted a correction from Sir Francis Fremantle that the central organization was not the British Medical Association but the Central Medical War Committee, which included others beside the British Medical Association.

Part-time Service in the Emergency Medical Service

In an answer on November 2 to Sir Ernest Graham-Little Dr. ELLIOT said that the number of specialists and senior members enrolled in the Emergency Medical Service who reported for whole-time service in the London sectors and were for the most part on the visiting staffs of the London voluntary hospitals was 656. Of these seventeen were on indefinite leave without pay and five had transferred to part-time. There had been one offer of service without obligation. The whole question had been under consideration by a special committee, including the Presidents of the three Royal Colleges. This Committee had formulated its recommendations, which it would discuss with Dr. Elliot on November 3.

Sir ERNEST GRAHAM-LITTLE said the uncertainty was mischievous for these voluntary hospitals, and only 25 per cent. of the members of these staffs had applied for part-time service. Dr. ELLIOT said it was for this reason that he would give urgent consideration to the recommendations from the special committee.

Tuberculosis in Billets

Mr. EDE inquired on November 2 whether advice had been tendered to billeting authorities on the undesirability of billeting evacuated persons, especially children, in houses in which a patient recently discharged from a tuberculosis sanatorium lived. Dr. ELLIOT answered that he had recently made it clear to a conference of representatives of the voluntary organizations for the prevention and cure of tuberculosis and of medical officers of health that patients in the infective stages of tuberculosis who had been inadvertently discharged from sanatoria at the outbreak of war should be sought out and brought back for treatment. He had no reason to believe that billeting officers were not alive to the point made by Mr. Ede. The only sound way was to seek out the tuberculous patient and give him institutional treatment. The information in the possession of local authorities as to tuberculous cases was, of course, confidential.

B.M.A.'s Protection of Practices Scheme

On November 7 Mr. GROVES asked the Minister of Health whether he was aware of and had authorized the circular letter of the Central Emergency Committee that medical practices, both as regards private and National Health Insurance practice, could be adequately protected under the British Medical Association's scheme, and in no other way. He asked whether the Minister had approved the scheme and disapproved of any other scheme whether instituted by an insurance committee or otherwise. Dr. ELLIOT replied that some of the documents issued by the Central Emergency Committee of the British Medical Association were sent to him for his information, but he did not know to what particular document Mr. Groves referred. He was aware of the Association's scheme for the protection of the practices of practitioners engaged on whole-time national service, and h. l recommended insurance committees to assist in its operation so far as it related to insurance practice. He had approved a number of substantially similar schemes submitted by insurance committees and panel committees jointly, and was prepared to consider any other schemes submitted by such committees.

Medical News

In reply to numerous inquiries the Clothes Room Committee of the Ladies' Guild of the Royal Medical Benevolent Fund announces that the work is being continued throughout the present national emergency. Existing conditions make every effort much more difficult, but it is hoped that the committee may have sufficient support to help all beneficiaries. Parcels of clothing can be sent as usual to B.M.A. House, Tavistock Square, W.C.1.

The Royal Society announces that the Croonian Lecture on "Aspects of Animal Locomotion" will be delivered by Professor J. Gray, F.R.S., on Thursday, November 16, at the Zoological Department, Downing Street, Cambridge. The lecture will deal primarily with the mechanism responsible for the neuromuscular co-ordination of locomotion in a variety of animals. A cinematograph demonstration will be given of each of the main facts alluded to in the lecture. Tea at 3.45 p.m.

The twenty-eighth Long Fox Memorial Lecture will be delivered by Dr. C. C. Chesterman in the H. H. Wills (large) Lecture Theatre, Bristol University (Royal Fort), on Tuesday, November 14, at 3.40 p.m. His subject is "Forest Folk: Modern Medicine in the Congo."

The first medical congress in Bolivia will be held at Caracas from December 17 to 24. A very full programme is announced.

The British Institute of Philosophy announces a series of public addresses on "The Deeper Causes of the War and the Issues Involved in it," to be given at the Royal Empire Society at 2 p.m. on Thursdays, November 16, 30, December 7, 14, and continuing after Christmas. The first four speakers will be Professor W. G. S. Adams, Professor Gilbert Murray, Viscount Samuel, and the Dean of St. Paul's. Tickets can be obtained on application to the Director of Studies, the British Institute of Philosophy, University Hall, 14, Gordon Square, London, W.C.1.

No meeting of the Medical Society of Individual Psychology will be held this month, but it is proposed to hold the December meeting in the afternoon. Notices will be sent out to members a fortnight beforehand. Publication of pamphlets will be continued.

The Maida Vale Hospital for Nervous Diseases (Maida Vale, W.), which has maintained an uninterrupted out-patient service since the outbreak of war, announces that on and after Monday, November 13, the out-patient department will be open in the mornings at 9.30. Out-patients should therefore attend at 9.30 a.m. instead of at 1.45 p.m.

The Finney-Howell Research Foundation announces that all applications for fellowships for next year must be filed in the office of the Foundation, 1211, Cathedral Street, Baltimore, Maryland, by January 1, 1940. Applications received after that date cannot be considered for 1940 awards, which will be made on March 1. This Foundation was provided for in the will of the late Dr. George Walker of Baltimore for the support of "research work into the cause or causes and the treatment of cancer." The will directed that the surplus income from the assets of the Foundation, together with the principal sum, should be expended within a period of ten years to support a number of fellowships in cancer research, each with an annual stipend of two thousand dollars, "in such universities, laboratories, and other institutions, wherever situated, as may be approved by the Board of Directors." Fellowships carrying an annual stipend of 2,000 dollars are awarded for the period of one year, with the possibility of renewal up to three years; when deemed wise by the Board of Directors, special grants of limited sums may be made to support the work carried on under a fellowship. Applications must be made on the blank forms which will be furnished by the secretary.

The notice that the hours of the out-patient department at the National Hospital for Diseases of the Nervous System (Queen Square, W.C.) have been altered has resulted in an increased number of attendances. Patients should, if possible, come on Monday, Tuesday, Wednesday, Thursday, and Friday at 9.30 a.m. In certain circumstances some patients can be seen up to 12 noon.

The French postal authorities have issued an anti-venereal postage stamp with the motto *Pour sauver la race*, the small sum spent by the purchaser over and above the ordinary value of a postage stamp being allocated to the anti-venereal diseases organization responsible to the Minister of Public Health for propaganda.

Dr. Duncan Graham of Toronto was nominated president-elect of the Canadian Medical Association at the last annual meeting at Montreal.

A campaign against undulant fever has been organized in Denmark, and has been supported by a donation of 100,000 kroner by the Government.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

The incidence of scarlet fever declined during the week in England and Wales, but diphtheria showed a slight increase; the incidence of both diseases was below the level of 1938. In Scotland and Northern Ireland notifications of both diseases were fewer, and there was an increase in Eire, slight in scarlet fever and appreciable in diphtheria. Notifications of dysentery have recently increased in Scotland, the numbers recorded in the last four weeks being 27 (6), 69 (37), 89 (60), and 39 (22). The figures in parentheses denote the notifications in Edinburgh—more than one-half of the 224 recorded for Scotland during the four-week period; the disease appears to have been mild, as there were only five deaths, representing a case mortality of 2.2 per cent.

Notification of Measles and Whooping-cough

The Minister of Health recently made regulations, which he has communicated to county councils and local authorities in England and Wales in Circulars Nos. 1896 and 1896a, whereby measles and whooping-cough must be notified by medical practitioners to medical officers of health. The object of these regulations, which were put into effect on November 1, 1939, is to provide the Ministry of Health with data on the total incidence and geographical distribution of these diseases and the bearing thereon of the displacement of susceptible subjects by evacuation schemes. Early information might enable authorities to secure supplies of immune sera or vaccines for use in the prevention or modification of these diseases in reception areas where these specific agents have not been generally available. Hitherto measles and whooping-cough have been notifiable only in certain districts and to a limited extent. For example, in the administrative county of London notification was put into effect on October 1 last year and was confined to cases occurring in a household at an interval of two months from any previous cases; other local authorities have restricted notification to subjects under 5 years of age.

Diphtheria in Europe

The decline in the morbidity and mortality of diphtheria recorded in the post-war years was followed by an increase in most European countries in the three-year period 1934-6. Since that time the disease has declined generally, but in 1938 increases compared with 1937 were encountered in Germany, England and Wales, Scotland, and Italy. There has been less diphtheria in the first six months of 1939 than in the corresponding period of 1938 in all European countries except Denmark, Finland, and Switzerland.

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INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended October 21, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	18	1	7	—	2	19	5	3	—	—
Deaths		—	—				—	—		
Diphtheria	975	35	189	61	31	1,367	173	233	60	20
Deaths	22	—	5	2	—	17	2	4	—	—
Dysentery	62	4	39	1	—	35	10	16	—	1
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	1	—	—		—	3	—	—		—
Deaths		—	1				1	1		
Enteric (typhoid and paratyphoid) fever.. ..	31	1	2	5	—	37	12	4	3	3
Deaths	—	—	—	1	—	1	1	—	—	—
Erysipelas			57	8	2			82	3	6
Deaths		—	—				—	1		
Infective enteritis or diarrhoea under 2 years ..										
Deaths	31	—	13	7	7	51	8	11	7	1
Measles			5		5		26	18		3
Deaths	1	—	—	—	—	2	—	—	—	—
Ophthalmia neonatorum	74	5	24		2	97	9	38		—
Deaths										
Pneumonia, influenzal*	493	31	5	4	11	534	45	6	5	2
Deaths (from influenza)	23	3	1	—	—	26	1	3	1	—
Pneumonia, primary			123	17				233	6	
Deaths		9		8	5		14		8	6
Polio-encephalitis, acute	3	—				7	—			
Deaths		—					—			
Poliomyelitis, acute	37	2	1	1	—	81	11	4	2	1
Deaths		—	—				2	—		
Puerperal fever	3	3	11	4	—	2	2	24	1	—
Deaths		1†					—			
Puerperal pyrexia	156	2	19		1	157	13	16		—
Deaths										
Relapsing fever	1	1			—	—	—			—
Deaths										
Scarlet fever	1,336	28	212	67	105	1,864	159	395	43	92
Deaths	2	—	—	—	1	4	—	—	1	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough			24		5		131	163		4
Deaths	5	1	3	—	—	4	1	4	—	1
Deaths (0-1 year)	243	14	76	22	17	265	41	64	21	18
Infant mortality rate (per 1,000 live births) ..						44	34			
Deaths (excluding stillbirths)	4,421	650	649	176	124	4,086	764	566	154	124
Annual death rate (per 1,000 persons living) ..			13.1	11.8	10.9	10.0	9.7	11.5	10.4	11.0
Live births	5,583	664	851	322	219	6,663	1,266	864	305	227
Annual rate per 1,000 persons living			17.2	21.6	19.2	16.4	16.1	17.6	20.7	20.1
Stillbirths	219	20	41			255	40			
Rate per 1,000 total births (including stillborn)			46			37	31			

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Death from puerperal sepsis.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS.—All communications should be addressed to the Advertisement Manager (office hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

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The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the Office of the Cumann Dochtuirí na h-Eireann (I.M.A. and B.M.A.), 95, Merrion Square, W., Dublin (telephone 62550 Dublin).

QUERIES AND ANSWERS

Effect of Castor Oil on Epithelium

Dr. N. Z. **KHAN** (Calcutta) writes: The striking results sometimes obtained on the administration of castor oil in early and mild cases of mucoid and bloody influx of dysentery cases seems to be due to its stimulation of regenerative capacity of epithelial structures and not to the cleansing effect, as other purgatives do not help to the extent that it does. On the above assumptions is it not justified to advocate more extensive use of sterile castor oil in cases of ocular and nasopharyngeal affections, and above all in burn cases? Non-stickiness of any necessary dressing is of great significance in treating raw surfaces.

Income Tax

Staff Fund Payments

"**TAU**" explains that at the hospital with which he is connected that part of the Government fees which was to be paid to the honorary staff was placed to a staff fund from which payments were made for special purposes, and the balance was accumulated. "Tau" understands that income tax has been paid thereon. He is outside the scope of the hospital pension scheme, and received in 1938 a lump sum of £x as his share of the accumulations He is being assessed to tax on that amount as if it were a profit of the year in which it was received. Is this correct?

*** If, as we understand, income tax was paid by the treasurer of the staff fund on the whole of the fees received by that fund, it seems that "Tau" has a good claim to regard the grant made to him as his share of a taxed fund, of which he and others were beneficiaries. In other words, tax has already been paid by someone acting for him, and cannot properly be charged again. If the facts do not bear that interpretation—and a full examination of the documents and circumstances is desirable—we do not consider that "Tau" can legally claim to spread the income back over the years when it accrued *to the fund.* If his legal title to participate arose only when the grant was made in 1938, then the payment was a profit of that year. Possibly some concession might be made administratively.

LETTERS, NOTES, ETC.

"Foreign Pharmaceutical Products"

Messrs. **WILLIAM R. WARNER** and Co., Ltd., the manufacturers of the products sold under the trade marks "Anusol" and "Veganin," explain that as a result of the inclusion of these products in the list of "Foreign Products" prepared by the Association of British Chemical Manufacturers which was reproduced in our issue of October 28 they have suffered serious reactions so far as the trade and the medical profession are concerned. As already explained, this list was published in all good faith, the Association of British Chemical Manufacturers being relied upon for its accuracy, and we regret exceedingly that any ill results should have occurred as the result of the erroneous inclusion of Messrs. William R. Warner and Co.'s products. We trust, however, that this statement and the other steps which we have taken will correct any wrong impression and reassure the trade and the medical profession that the trade marks "Anusol" and "Veganin" distinguish products which are owned by a British company and which have been manufactured in this country for many years at Messrs. Warner's factory at Chiswick, and that the continued manufacture is not in any way affected by the war.

Mr. **HENRY J. W. FRANCE**, Managing Director of Roche Products Limited, Welwyn Garden City, Herts, referring to the schedule of foreign pharmaceutical products with British equivalents and alternatives, writes: By omission it [the schedule] ignores all manufacturers in this country who are not members of a particular trade association. . . . I notice that no reference is made to the Roche vitamin preparations manufactured at our works here. . . . Omnopon, which we manufacture here from opium, is stated to be a foreign product.

Mr. H. C. H. **GRAVES**, Chairman and Managing Director of Vitamins Ltd., Hammersmith, W.6, writes in reference to the list of pharmaceutical products published in our issue of October 28, under the heading of "Foreign Pharmaceutical Products: British Equivalents and Alternatives": The effect of the omission of our name from this list is to imply either that we are a foreign firm or that our products are not worthy of inclusion in the list. . . . I would like to point out that we have had a vitamin B_1 concentrate on the market in this country long before any of the vitamin B_1 products mentioned in the list were available, and, in fact, our product was advertised in the pages of your *Journal* as long ago as May 2, 1936. Since that date we have introduced other varieties of vitamin B_1 both in the pure form—namely, as aneurin tablets and ampoules—and in the form of a natural adsorption product.

The Manager of the Saccharin Corporation Limited (London, W.) writes: I notice in your issue of October 28 a list of products which it is stated "may be difficult to obtain." Among these is novocain, and as my company is the distributor of novocain I can assure you that ample supplies are available.

Treatment of the Common Cold

Dr. N. **HOWARD MUMMERY** (Jersey) writes: Your columns frequently contain alleged remedies for the common cold, most of them useless or unpleasant to use, but so far I have seen no reference to a tablet with the trade name of "caapi," marketed by Messrs. H. R. Napp, Ltd., which contains atropine, caffeine, phenacetin, quinine, and cinnamon. All these ingredients are very old remedies for "colds," but in this combination they have a remarkable effect if taken strictly in accordance with the instructions on the packet, and my own experience, and that of all to whom I have recommended the remedy, is that they seldom fail to abort an acute coryza completely within twenty-four hours. I have no interest whatever in the firm mentioned.

Slippery Floors in Hospital

"**TIMOCLES**" writes: Some features of hospital construction seem to be nobody's business, and, apparently, the condition of floor surfaces comes into that category. Few of us who have walked the floors of hospitals have escaped occasional falls on slippery patches, and in most hospitals it is quite usual to find at least one bed occupied by some old person who, when calling to see a relative, has slipped and fractured a femur or sustained some other serious injury. These injuries must frequently come under the notice of surgeons, and it amazes me, as a physician, that no effective action is taken by them. To-day I slipped twice while walking along a tiled passage in a large hospital, but being fairly nimble I was able to maintain my equilibrium; had I been old, stout, or feeble the results might have been serious. One of the house-surgeons told me that he knew of three fractures which had occurred in this hospital during the past few months among visitors and members of the staff. (One was an ambulance man who fractured his femur.) The total number of such cases in Great Britain would probably surprise most of us. This is not a time for discussing unimportant details, but, apart from their actual danger, slippery floors must impair efficiency considerably. Surely it is time that the medical staffs insisted on the obvious remedy for this ridiculous defect which exists in so many hospitals.

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THE TREATMENT OF OPEN FRACTURES*

BY

WILLIAM GISSANE, M.B., Ch.M., F.R.C.S.

Surgeon Specialist to the London County Council; Surgeon in Charge of Accident Unit, St. James Hospital, London

The principles governing the treatment of open fractures hold good whether the fractures are caused by trauma common in civilian life or by the high-explosive missiles of modern warfare. Certainly war adds many more difficulties to the surgical problems presented by such fractures, as witness the extent of the problem, the severity of the injuries, the delay in bringing in the wounded—adding exposure, dehydration, and loss of blood to accentuate the shock of a painful injury—difficulties of transport and hospital facilities, and finally the especial prevalence of infection, particularly of tetanus and anaerobic infection. That the problem is immense only places it in line with the other problems this country is now facing.

Organization

The first essential to proper treatment is to place an effective organization to deal with each stage and to co-ordinate the entire period of treatment. The great increase of road accidents in recent years presented a similar problem for solution. The British Medical Association report of 1936 and the findings of the Interdepartmental Committee on Fractures formulated four guiding principles necessary for treatment. They were: (1) segregation; (2) unity of control; (3) careful after-care; (4) rehabilitation centres. The creation of a similar organization now both for civilian patients under the Emergency Medical Service and for the war-wounded would seem the first essential. There is nothing new in the problem, and it was solved successfully during the Great War. Robert Jones realized the need, and was able to produce an organization which dealt satisfactorily with the great numbers of severe fractures which came back from France to this country. He insisted on segregation, and, backed by the Advisory Council, he overcame all opposition and formed the orthopaedic centres, where, for the first time, segregation, unity of control, after-care, and rehabilitation were practised. With an organization which controlled in the end some 36,000 beds the fracture problem was solved. All that is needed is to recapture this organization, re-form these centres, and concentrate the patients and the skilled personnel. It is easily possible. It needs only the good will and foresight of those who control the Medical Services of the Fighting Forces and the Civil Medical Service to give us again what we had in 1918. It is interesting to recall Robert Jones's (1925) own words:

> "The Great War afforded the most convincing proof of the mishandling of complicated, and even of simple, fractures. In the early period these cases arrived home with appalling deformities. Excessive shortening and malunion were the rule. . . . Men with no experience in this branch of work did the best they could, while men who understood how to treat fractures found the conditions such that it was impossible to obtain satisfactory results. They deplored the fact that . . . continuity of treatment was impossible. Fractures of the femur serve as a notable example. . . . In 1916 the mortality from these [open] fractures amounted to 80 per cent., a large proportion of the deaths occurring on the way to or at the casualty clearing stations. Later, when the Thomas splint was applied almost exclusively, and as near the firing line as possible, we have it on the authority of Sir Henry Gray that the mortality in 1918 was reduced to 20 per cent. This is an astounding and inspiring fact, and led Colonel Crile of the United States Army to say that the Thomas splint did more to prevent death from shock than any other single measure.
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> "The next great advance in the treatment of fractures at the front occurred when we were able to secure the segregation of cases. The country owes a great debt of gratitude to Major Meurice Sinclair. . . . His femurs came over with scarcely any shortening and with excellent alignment. The problems of segregation and of team work had been overcome, with very admirable results. In England, however, we were not in a position to segregate these fractures when they arrived. . . . Splints were removed too soon and often changed unnecessarily, and the good work abroad was thus sadly interfered with. . . . After a time permission to segregate the fractures was granted. . . . Let me emphasize again that the success in the treatment of fractures during the later phases of the war was due to expert supervision, simplicity of apparatus, team work, segregation, and appropriate after-care. These are the lessons the war taught us; are we going to apply them, and improve upon them, or are we to revert to the bad old way?"

In the recent evacuation of fracture cases from the London area we have, in fact, immediately returned to "the bad old way." Fractures from one segregated centre have been dissipated all over the South Coast. Continuity of treatment could have been maintained by their evacuation to a prearranged centre. Skilled personnel are available, and indeed very willing for work. In the present days the many details of necessary organizations to maintain the continuity of treatment could be worked out quietly between the evacuating hospitals (now casualty clearing stations) and their base hospitals.

First-aid Treatment

MECHANICAL TREATMENT FOR QUICK TRANSPORT

The method employed must be both efficient and simple; it must allow easy and painless access to the wound and protect the limb from harm during transport, and the splints must be easily carried by the stretcher party. For these reasons only two splints are advocated: for the arm the swivel ringed Thomas, and for the leg the Thomas knee splint. The method of application of these splints needs no explanation here. There is only one other splint required to complete the stock of first-aid splints. It is a rather cumbersome piece of apparatus, but it should be available at the casualty clearing stations; it is a modification of the Thomas hip splint known as "Jones's abduction frame," and is used for high fractures of the femoral shaft and hip regions. One simple modification of this splint allows free access to gluteal and pelvic wounds—most difficult regions to treat adequately without the frame. The patient, who lies on this splint, can be lifted and moved without pain, without disturbing the fracture, and the dressing can be changed without interfering with the mechanism of fixation. With these three splints traction is easily applied and maintained, and need not be relaxed for any purpose during the period of transport.

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* Revised from a paper read in opening a discussion in the Section of Orthopaedics and Fractures at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

While treatment can be satisfactorily maintained on the Thomas knee splint and the abduction frame, it should be stressed that the Thomas arm splint is essentially a transport splint, and its prolonged use will give rise to permanent stiffness of the elbow, wrist, and fingers.

TREATMENT OF SHOCK

Shock is present in varying degrees in all patients with open fractures, and in its initial stage is undoubtedly due to the pain of the injury. The first-aid treatment of shock is to immobilize the fracture by an efficient splint so that the patient can be moved without further aggravating the pain and increasing the shock. To this purpose the application of the Thomas splint and fixed traction will be undertaken with great gentleness and under the injection of 1/3 grain of morphine for an adult. In those patients in whom exposure, dehydration, and loss of blood have added to the shocked state the first step again is application of the Thomas splint under morphine followed by the administration of hot fluid by the mouth, the application of heat, and, if possible, a period of rest.

WOUND DRESSING

Here our aims are twofold—to cover the wound and so prevent further infection, and to conserve the vital quality of the damaged tissues. A dressing of a non-irritating modern antiseptic such as 1 in 2,000 euflavine is adequate to both these aims. The use of strong irritating antiseptics such as iodine defeats the last aim, and consequently these substances are to be avoided.

TREATMENT BY SERA AND DRUGS

The main defence against infection of the wound is by early radical débridement. However, the prophylactic injection of tetanus antitoxin and anti-gas-gangrene serum should be made at the first available opportunity. Recent advances in drug therapy have given us sulphanilamide and its derivatives. These drugs are of the greatest value when once infection is established, but their prophylactic value against infection has yet to be proved.

Surgical Treatment of Wound

This stage of treatment should be carried out as soon as possible after receipt of the injury. Early efficient surgical treatment of open fractures is the only means by which we can prevent infection and so legislate to shorten the period of treatment and save the function of the injured limb. Hospitals for such treatment must be as near as possible to the "danger areas." The stages of surgical treatment of open fractures may be summarized as follows:

1. The preliminary treatment of shock up to the stage at which the administration of an anaesthetic is a safe procedure—this stage should be short and should rarely exceed one hour.

2. The prevention of infection by direct surgery at the earliest moment and certainly within eight hours of the injury. This includes the excision of all dead and dying tissues, ingrained dirt, and debris—the vital quality of the tissues left after débridement rather than the use of any antiseptic being the safeguard against infection.

3. The gentle reduction of the fracture. From this stage onwards the reduction is held either by the extension pieces of an orthopaedic table or by a distraction apparatus.

4. The immediate closure of all wounds treated within eight hours of receipt of the injury, either by suture or by skin graft if a skin defect is present. Wounds treated after this period are left open.

5. The application of a soft protective-pressure dressing to the area of soft-tissue damage in order to prevent oedema and death of the tissues from failure of return of fluids from the area of soft-tissue injury.

6. The final immobilization of the fracture in its reduced position. The principle hereafter to be followed is *rest*, complete and absolute. If the limb is placed in plaster-of-Paris this rest is assured—even the most inquisitive cannot remove a dressing placed under plaster! Plaster-of-Paris is used whenever it can effectively hold the reduction, incorporating, if necessary, transfixion pins through the proximal and distal fragments placed at some distance from the site of fracture. For some fractures splints are necessary—for example, in fractures of the shoulder-joint and some fractures of the shaft of the humerus the shoulder abduction splint has its place. For the pelvis, hip, and some high fractures of the femoral shaft the Jones abduction frame is indicated, while for the femoral shaft the Thomas knee splint is the splint of choice. All these splints allow the application of fixed traction, and without this additional aid it is not possible to hold the reduction of some fractures. But the governing principle should be retained—the wound dressings should be left undisturbed. I believe that it is upon the principle of rest that the success of the Winnett-Orr plaster is founded.

7. Complete rest of the injured limb for at least five weeks. The temperature and pulse rate may be somewhat raised during the early stages of this period, but if the general condition of the patient is satisfactory the plaster or dressings should not be removed. If the *x*-ray picture of the reduction is unsatisfactory it should be remembered that further manipulations undertaken before soft-tissue repair has occurred will most surely inflict additional damage to the limb. Such manipulations should be postponed until soft-tissue repair is sound enough to withstand this additional trauma.

Preparation of Limb for Operation

The undressing of the limb and the removal of the first-aid splint are parts of the surgical procedure, for in every way we must guard against inflicting additional injury. The open wounds are sometimes large and multiple; consequently it is not always possible to shave and wash the limb without further contaminating the wounds. It is safer to cover the limb with a sterile roll of gauze soaked in a suitable antiseptic or in spirit, the areas of the wounds alone being left uncovered. This technique allows us to cleanse the skin in the neighbourhood of the wounds, carry out the débridement, reduce the fracture, and close the wounds by suture, skin graft, or dressing before proceeding to the cleansing of the unaffected areas of the skin prior to the application of the plaster cast or appropriate splint. During the whole of these procedures it is essential that the limb be lifted clear of the table, and for this purpose the traction appliances of an orthopaedic table or a screw traction apparatus of the Böhler type are indispensable.

Anaesthesia

Shock is primarily caused by the pain of these injuries: to relieve the pain is to treat shock. There is no better anaesthetic agent for this purpose than brachial plexus block by 25 c.cm. of 2 per cent. novocain for the upper extremity and low spinal anaesthesia for the lower extremity, and for patients seen early there is no reason to delay treatment. When the picture of shock has been accentuated by delay, exposure, dehydration, and loss of blood, with a consequent fall of blood pressure to 90 mm. Hg or below, there should be a period of delay to treat such shock adequately followed by anaesthesia by gas-and-oxygen with ether. Spinal anaesthesia in such patients is definitely dangerous.

Débridement

This is another lesson of the last war: " The large-scale experiment of 1914–18 established the failure, relative but none the less unmistakable, of antiseptics. It showed that what determined the fate of a wound was, above all, the vital quality of the tissues exposed to infection " (Leriche, 1939).

In those wounds seen before infection has supervened it is our task to make quite sure of the " vital quality " of the tissues remaining after the débridement. This means an excision of all dead and dying tissues and the removal of all foreign matter from the wound. The main force of trauma in the civilian type of open fracture is inflicted on the skin fat and muscles, and the quantitative sacrifice of non-vital tissues will be in that order. In the injuries caused by the high-explosive missiles of war the skin injury is frequently small and the muscle injury great. In both types the surgical exposure must be adequate to explore the extent of the damage, and the excision of dead tissues must be radical. Fortunately osseous tissue has remarkable powers of recovery; it may be smashed into multiple pieces, but if given a chance it will live. Débridement of bone should never be more than a shaving of periosteum or osseous tissue. Large lengths of bone should never be removed; indeed, it is wiser to amputate than to remove large lengths of the femoral or tibial shaft.

Buried sutures should seldom be left in the wounds after débridement, nor are they necessary. Muscles are damaged almost exclusively in their fleshy bellies where suture cannot hope to repair the damage. Few blood vessels require ligature. With the exception of division of the musculo-spiral nerve in open fractures of the middle third of the shaft of the humerus, nerves are seldom divided in the civilian type of injury. I understand that in war the sciatic nerve is often divided in gunshot wounds of the thigh associated with fractures of the femur. If a divided nerve is encountered in the débridement it should be sutured by the minimum number of stitches of the finest thread or catgut after the fracture is reduced. Such approximation of the nerve ends will save a very tedious exploration at a later date.

Value of Skin Grafts

All skin flaps raised from their connective-tissue beds by the violence of injury must be carefully examined and their vitality proved by demonstrating bleeding vessels from their edges. The débridement of such flaps must be continued until this demonstration has proved satisfactory. In the extremities such excision of skin will invariably leave a defect, for under no circumstance must skin be approximated in open fractures under tension. Often patients have lost areas of skin by the violence of the injury. If such skin defects are allowed to heal by the normal processes of tissue repair, not only is the healing extremely slow, but if the wound is a large one it is associated with permanent deformity in the underlying muscles, with associated loss of function to neighbouring joints. Furthermore, the final scar, particularly if the healing has occurred under plaster-of-Paris, is of tissue-paper texture and a source of subsequent trouble; indeed, many such scars have to be excised and treated by skin grafting at a later date before sound healing has been attained.

For several years I have grafted these skin defects, and I am satisfied with the results. By skin grafting no time is allowed for fibrous-tissue changes to take place in the underlying muscles, and as a consequence the normal elasticity of the muscle is retained. The grafted area has a particularly healthy appearance; fat is often laid down under the graft, and the area stands up to normal trauma very well.

I have followed two methods of grafting: (1) immediately following the original débridement; (2) at the first change of plaster—that is, three to five weeks after the date of injury. Both methods have given excellent results. The second will be the method of choice during war, when speed is an important factor in treatment at the casualty clearing stations. The graft used is the split skin or Thiersch graft, which can be cut with a razor to quite large dimensions after practice. It must be accurately placed on the donor area and held in position by a firm pressure dressing; then it must be left undisturbed for at least a period of five days, when it will have " taken." The dressing may be kept in position for a much longer period, and can be left under plaster and the usual routine treatment for the fracture followed.

In the " delayed " grafting, the appearance of the granulating surface of the wound and the general condition of the patient are the indications whether or not the graft will be successful. If the granulations are healthy and the general condition satisfactory the graft will live. After a limb has been in plaster for a few weeks it may smell very offensively; if the wound when cleaned presents its usual healthy appearance it should be skin-grafted.

Treatment of Infected Open Fractures

In war many patients will receive their first treatment when the wound is obviously infected. The wounds in such cases should be explored and all foreign matter lying free in such wounds should be removed and adequate drainage established. The fracture should be reduced and held in the reduced position. Although I am a strong advocate of the Winnett-Orr method of treatment for such fractures, this method should be under the continuous supervision of the surgeon undertaking the treatment. Complications I have experienced have included severe secondary haemorrhage under the plaster and the development of gas gangrene under the plaster. Accordingly I believe that it is safer to transport such cases to the base hospitals in the Thomas splint and to allow the surgeon at the base full control of the Winnett-Orr method of treatment.

Open Fractures associated with Other Serious Injuries

Sometimes in civilian practice, undoubtedly more frequently in war surgery, the problem of serious abdominal injury is associated with that of open fractures of the extremities. Under one anaesthesia the immediate treatment must be completed. First the extent and nature of the more serious injury must be explored and treated before it is possible to legislate on the line of treatment to be followed for the fractured extremity. The treatment of the abdominal injury may so take charge of the situation that all that is possible for the open fracture is the application of an appropriate splint. With an ideal organization, such problems are the sphere of a surgical team, and although I remain a firm advocate of segregation of fracture patients I believe that in the "danger zones" the segregation should only be one department of a general hospital containing personnel capable of dealing efficiently with any emergency.

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THE INTRA-UTERINE DEVELOPMENT OF RESPIRATORY EFFORT*

BY

SIR JOSEPH BARCROFT, F.R.S.

Late Professor of Physiology, University of Cambridge

The attempt to explore a subject so well worn as the regulation of respiration by approaching it from a new angle is admittedly a daring one; but a fresh approach seems to be the only excuse sufficient to justify the effort. In the present introduction, therefore, I shall put before you some glimmerings on the matter, as a crude attempt made to build it up from the developmental standpoint: developmental not in the philogenic but in the ontogenetic sense—that is, by studying the phenomenon as it gradually unfolds in the life of the mammalian foetus to see what sort of picture we obtain. Study of the regulation of breathing demands an understanding of the phenomenon of respiration, and as that appears to be bound up with the essence of movement itself you must bear with me if I start at the very beginning.

Stage I: The Initiation of Movement

The first neuro-muscular movements observable in the sheep foetus appear on the thirty-fourth day of foetal life—not quite a quarter of the way through pregnancy, which in the sheep is normally about 147 days. The foetus is perhaps the size of the thumb-nail, but it is large enough to admit of the appropriate stimulation of the sensory fields which correspond to the endings of individual nerves. The very first movement to take place is obtained from stimulation of the area just over the lip and under the eye: this corresponds to the position to which the maxillary branch of the trigeminal nerve has grown. The movement obtained is a slight lateral one of the head, and appears to be asymmetrical because the stimulus is asymmetrical: in the next few days the nerve grows down to the snout, at which time stimulation of that organ (involving the nerves from both sides) produces asymmetrical throwing back of the head.

It is interesting at the very outset that a nerve so intimately connected with respiration as the maxillary branch of the trigeminal should be the first to evoke movement.

Stage II: The Earliest Rhythmic Movement

Within the next week, or even the next three or four days, the capacity of the foetus for movement has advanced in quite a number of ways, of which four may be singled out: (1) the sensory area, stimulation of which can evoke movement, becomes much enlarged; (2) the adequate stimulus alters in nature; (3) the extent of the response becomes greater; (4) the response becomes rhythmic. To consider these in a little more detail:

1. Not to go further than the trigeminal nerve, the maxillary branch has now come to innervate a much greater area by, say, the fortieth day than was the case on the thirty-fourth. Moreover, the supra-orbital branch of the ophthalmic division has come into play. Thus, from considerable areas around the snout and eyes stimulation by a glass rod or a faradic current will evoke a response.

2. The repercussion of the enlargement of the sensory field means that a much less intense stimulus if applied to the enlarged area will evoke a response. Thus a drop of saline falling in the eye from no more than a centimetre will initiate movement; or, *in utero*, a current set up by the injection of warm saline into the sac, if it impinges on the face, will have a like effect.

3. As the days pass, more and more muscles become involved in the response. Starting with a simple movement of the neck muscles, it comes to involve the longitudinal muscles of the back; later those of the limbs and tail, as well as those of the throat and trunk: by the forty-second day the diaphragm is formed, and it too is involved.

4. The response has become rhythmic. No movement is sustained for any length of time, but the whole response lasts perhaps a half to three-quarters of a minute, in that it consists of a rhythmic series of individual spasms. Each spasm involves, as indicated above, a great part of the whole musculature of the living foetus. The conditions which determine its periodicity have not been defined.

This perhaps is the place for a word about the phenomenon spoken of as "spontaneous movement." Most users of this phrase, ourselves included, have safeguarded themselves by saying that it means no more from their pen than an admission of inability to ascribe any definite form of stimulus to the movements. The phenomenon is evident enough, and is that in first opening the uterus the foetus as seen in the sac is undergoing rhythmic movements similar to those described above. In view of what has just been said about the ability of currents in the amniotic fluid and slight changes of pressure to produce foetal rhythms; we are sceptical as to the spontaneous nature of these rhythms, using the word "spontaneous" in the sense of something which starts in the central nervous system without the interference of stimuli from an afferent field.

Stage III: The Individuation of the Generalized Rhythm into Somatic Movement and Respiratory Movement

If the rhythm be set up by stimulation of the snout with a glass rod at about forty days the following may be seen. The first, or the first and second, of the individual mass movements which constitute the rhythm differ from the succeeding movements as follows. The extensor element is more pronounced. The head is thrown back—a composite movement which consists of an extensor and a flexor component; in the subsequent movements the extensor component drops out and the head nods forward. During the seventh week of foetal life the two sorts of movements diverge in type, till at the forty-ninth day the initial somatic movement is a long-drawn-out spasm, while the tendency of the subsequent rhythm is for all the muscular movements to be shed except those of the diaphragm, the thorax, and the throat. Here, then, is the essence of the neuro-muscular mechanism of respiration. It consists of three components: the sensory stimulus, the immediate somatic response, and the subsequent respiratory response. I am fortunate to have Professor Adrian as my chairman: neither in his presence nor in his absence would I make any attempt to say by what chain of events in the central nervous system a foetus can start with a hit on the nose or rump and end with an effort to get up, followed by the movement of a breathless attack; I know he would not allow me to say that the stimulus is turned into the response, but I am in hope that his own contribution will help to bridge the gap.

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* Read in opening a discussion in the Section of Physiology and Biochemistry at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

We have, then, the germ not only of the respiratory mechanism but also that of its regulation, for the three factors enumerated (the sensory stimulus, the immediate somatic response, and the subsequent respiratory response) are related to one another quantitatively: the stronger the stimulus the greater the somatic response and the greater the respiratory effort which follows it. At seven weeks the system has become very delicate. It is almost impossible to hold the foetus so quiet as to avoid the liminal stimuli required to initiate respiratory movement. Whether these stimuli are proprioceptive or whether they are due to alterations of pressure on the surface I cannot say; but the result is evident: quite a small movement initiates a respiratory rhythm in an otherwise quiescent foetus, whilst in one which already exhibits a rhythm muscular movement is associated with an alteration of the rhythm in three respects—(1) the frequency increases; (2) the movements become deeper; (3) the area of movement spreads. In short, the foetus exhibits the cardinal characteristics of forced respiration. It seems difficult to escape the conclusion that even at the seven-week stage nervous regulation of respiration—the phenomenon demonstrated by the classical experiment of Krogh and Lindhard—has been laid down. The nervous regulation of respiration, as opposed to the chemical, is, then, the first in time to be evolved, and appears to be part of the very essence of movement. Up to this date asphyxia has no effect upon bodily movement—respiratory or otherwise—except to obliterate it.

Time and space forbid a discussion of the anatomical basis of the individuation into somatic movement and respiratory movement. This much may be said: the individuation is coincident with the functional appearance of the midbrain, and demonstrates the first phase in the progressive forward development of the brain; for if the foetal brain be transected between the medulla and the red nucleus the pattern of movement reverts to a modification of the six-week stage—that is, a simple rhythm of a respiratory type.

Stage IV: Inhibition in Relation to the Asphyxia Factor of Respiration

From the end of the seventh week the foetus undergoes a remarkable change: from being on a hair-trigger it becomes increasingly inert. Stimulation elicits little movement, either somatic or respiratory. The foetus appears almost dead. That it is not may be demonstrated by three different procedures, application of any one of which will produce a reversion to the lively seven-week stage. These are: (1) transection of the central nervous system at the middle of the forebrain; (2) exposure; (3) and in the present connexion most important of all, asphyxia—that is, occlusion of the umbilical cord.

The first of the above procedures demonstrates the general nature of what is taking place. The section is made at any time after the fiftieth day, and the foetus allowed to grow on in the uterus so that there may be no question of traumatic stimulation. It then becomes clear that the alteration from the quiescent to the active stage is a matter of *release*. The lower centres are released from one in the upper part of the forebrain but below the cortex; in fact, the whole foetus after the seventh or eighth week is maintained in a condition of profound inhibition. Respiratory movement is no exception to this general condition; its existence at any time, or if it exists its degree, depends upon the issue of a battle between sensation and inhibition. The chemical factor in the regulation of respiration is in part the abolition of inhibition. Inhibition represents another phase in the forward functional development of the brain. Any circumstance which promotes sensation in the foetus will make for increased respiratory movement, the natural factor being somatic movement. Any factor which tends to reduce inhibition will have the same effect. If the two take place simultaneously their joint effects might be expected to be greater than that of either separately.

Stage V: The Onset of Birth

Such would appear to be the case at birth, for which the foetus is now fully prepared.

Increased Sensation.—The organism is at this stage introduced into a new environment, and one calculated enormously to increase the number of stimuli from sensory areas: stimuli of cold and touch from the skin; proprioceptive stimuli from the limbs, which are now able to move freely; and, not least, stimuli from the embryological origin of sensation, the maxillary division of the trigeminal nerve.

Depressed Inhibition.—At the same time the inhibition is depressed by asphyxia. This fact has two repercussions: (*a*) direct, (*b*) indirect.

(*a*) We are now in a position to give some quantitative estimate of the degree of asphyxia necessary to release the foetal respiratory mechanism. It amounts to a reduction of the percentage saturation of the blood from the brain—that is, gleaned from the sinuses—to about 20 to 10 per cent. oxygen saturation. At the level of asphyxia respirations will start.

(*b*) But release also takes place in other directions; reflexes generally become heightened, and the proprioceptive afferent stimuli resulting from the movements liberated may be an appreciable addition to the increase of sensation.

After the first breath—that is, after the chest has actually expanded and respiration has become established on a tentative basis—a whole new set of sensory stimuli come in from the respiratory area itself—the nose, the throat, the lungs, the diaphragm, and the chest wall. It will be for future research to sort these out and to determine whether or not to the end the regulation of respiration is a battle between sensation and inhibition. In the foetus, inhibition had the upper hand so completely that respiratory movements did not normally take place once it had been established; post-natally, on the other hand, sensation has the upper hand, inhibition merely damping the respiratory movements.

Some Pathological Forms of Forced Respiration

In the light of what has been said I find it interesting to review the possible cause of certain forms of hyperventilation that are associated with obvious dysfunction of the higher parts of the brain. Two which I may instance are found in coma and cerebral haemorrhages. It has always appeared difficult to me to associate these with stimulation of the respiratory centre, and therefore it seems not out of place to inquire whether they are not due to some form of release of medullary centres from an inhibition centre placed in the upper part of the forebrain. At all events, granting the existence of such a centre it would seem wholly reasonable to suppose that influences which deprived the cortex of its consciousness might extend their devastating influence to the upper part of the thalamus.

TREATMENT OF ANGINA OF EFFORT*

BY

GEOFFREY BOURNE, M.D., F.R.C.P.

Physician with Charge of Out-patients and of the Cardiographic Department, St. Bartholomew's Hospital

Cardiac pain may be founded on organic disease of the coronary vessels or it may be of a functional variety described variously under labels such as angina innocens, pseudo-angina, and left submammary pain. There are also certain well-known non-cardiac causes of chest pain which simulate cardiac pain fairly closely: fibrositis of the pectoral muscles, brachial neuritis, cholecystitis, pneumothorax, and diaphragmatic hernia are examples of this.

The first essential step is to distinguish clearly angina of effort. This is a pain generally felt centrally in the chest, but occasionally more on the left side. In a few individuals its first and chief manifestation may be in one or the other arm. Classically it is central and radiates most commonly to the left arm or to both arms. It is a quantitative pain, being exactly proportional to the amount of exercise the patient is taking. With slow walking or at rest there is no pain, but with any increase in the amount of exercise above a definite level a sensation of pressure, discomfort, or even pain arises. Should the exercise be increased the pain is quantitatively increased, and if the exercise ceases the pain immediately begins to subside. This symptom is so exact and so striking, and is supported so strongly by evidence on the point obtained electrographically and by post-mortem examination, that there can be no doubt that it results from some interference with the adequate flow of blood through a branch of the coronary arteries during exercise.

Grouping of Cases

For purposes of treatment angina of effort can be divided into two groups—the slight or moderate and the severe. Slight angina of effort need not be treated by rest in bed. There is only one real indication for putting such a patient to bed, and that is where the angina of effort is the only symptom of a small coronary thrombosis. This is a somewhat rare occurrence, but very definite in its symptoms, and suspicion of it should arise whenever angina of effort suddenly starts in a hitherto healthy person. In such cases the severity of the pain is greatest at the beginning and slowly subsides as time goes on. In the ordinary case the onset of the pain is gradual and is at first not taken great notice of by the patient, who ascribes it to flatulence or dyspepsia. Here the patient should be encouraged to take as much exercise as is comfortable, provided that it does not bring on pain. Where the pain only occurs at the starting of exercise, after which it can be walked off so that subsequent exercise produces no pain, the patient should be encouraged to do this, if necessary with the help of a tablet of nitroglycerin, which should be taken before the first pain is due to arise. The reason for encouraging such patients to take as much exercise as possible is that this measure is most likely to stimulate the development of a collateral circulation in the heart.

Patients with symptoms of angina of effort may also be subjects of adiposity. These patients may be helped considerably by a reduction in their weight. This reduction should not be made too rapidly, and if possible it should not be accelerated by the use of thyroid extract, for hyperthyroidism appears to be a factor in the sensitivity of the nervous system to cardiac pain. Another general measure to be considered is that of posture. The individual who carries most of his weight in his abdomen tends to assume automatically a position of lordosis. It has been claimed that correction of this posture by a properly fitting abdominal belt helps the thoracic movements and thus the mechanical position and function of the heart.

Prognosis

Perhaps the most necessary step in the treatment of patients with cardiac pain is an absolutely full and sympathetic physical examination. The patient should be first convinced that his cardiac condition has been made quite clear by the examination, and this examination should entail a complete history, physical examination, and investigation by electrocardiograph and screening apparatus. The next step is to explain to the patient, to an extent compatible with his understanding, that his symptoms are due to some loss of elasticity in a blood vessel, the result of which is that the heart is not receiving its full amount of blood during exertion, and to indicate to him that gradual and careful exertion is likely to help the organ to readjust itself to the new situation. The label "angina" should be omitted, for its application will only add a quite unnecessary factor of apprehension. The second point that should be stressed is that the pain is not dangerous, and that patients do not die during such attacks of pain. In an investigation into 112 successive cases of angina of effort Dr. Bodley Scott and I found only one example of death during an attack. It should also be borne in mind that patients with true angina of effort may live from ten to fifteen years after the start of the symptoms, and that although a certain proportion of them subsequently die of coronary thrombosis, yet many succumb to some quite different disease.

The above reasonably good prognosis will have to be modified and the modification explained to the patient's most responsible relative in certain circumstances; these are the presence of severe shortness of breath during exercise, of Cheyne-Stokes respiration, or of paroxysmal nocturnal dyspnoea, and electrocardiographic evidence of some serious myocardial disease, such as shown by a bundle-branch lesion, inversion of the T wave in Leads I and II, or a deep Q wave in Lead III. Another point suggesting a bad prognosis is a family history of sudden cardiac deaths during the 50's or early 60's. In one such family two brothers of the patient had died of coronary thrombosis and one had recovered from an attack, while the patient himself had suffered from coronary thrombosis two years previously and his tracing now showed evidence of gross myocardial disease.

In addition to reassuring the patient to the fullest possible extent, it should be explained that life must be lived physically and mentally in as leisurely a manner as possible. Hurry, tension, and strain should be avoided, and an attempt to cram into the day just one or two more activities than it would comfortably hold should be prohibited.

Coexisting Conditions

Certain other conditions may be present in a patient suffering from angina of effort. Disease of the stomach is particularly apt to accentuate cardiac symptoms, and the possibility of gastric ulcer, hyperchlorhydria, or even carcinoma must be considered, and, if present, they must be treated. A man who had been attending St. Bartholomew's out-patient department with a classical angina of effort was found also to be suffering from dyspepsia and loss of weight. He had a carcinoma of the stomach, which was removed surgically, after which his cardiac pain subsided. The effect of rest in bed as such could be considered here as a factor, but rest in bed alone is not usually followed by the disappearance of the symptoms of angina of effort. Disease of the thyroid gland where hyperthyroidism or hypothyroidism is present should also be kept in mind. Two cases of myxoedema with angina of effort in our follow-up clinic have been treated with thyroid extract, and both patients have lost their cardiac pain. Diabetes mellitus is often complicated by arteriosclerosis of the coronary arteries, resulting in angina of effort. Careful treatment of the diabetes generally helps these patients, but it should be remembered that the heart muscle needs a free supply of glycogen, and therefore, if it is not possible to balance the diabetes with less than 120 grammes of carbohydrate per day, it is advisable to give a freer supply of this with a proper quantity of insulin.

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* This paper forms the basis of a lecture to the Willesden Division of the British Medical Association and to the St. Leonards Medico-Chirurgical Society.

Drug Treatment

The drug treatment of angina of effort is somewhat disappointing except for the effect of nitroglycerin. Phenobarbitone, 1/4 grain t.d.s., p.c., is probably the most useful drug; but it can be given in combination with theobromine or diuretin in some such preparation as theogardinal, 5 grains t.d.s., p.c. In a few cases theobromine alone, 3 grains t.d.s., p.c., or theobromine sodium salicylate, 10 grains t.d.s., p.c., is effective. Nitroglycerin tablets can be taken by the patient as often as they may be required for the prevention or the treatment of pain. They are generally put up in chocolate, so that the patient may be reminded to crush them in the mouth and hold them there for a few minutes before swallowing. If they are swallowed direct, pharmacological action is delayed and is sometimes less efficient.

Type of Person Affected

It has long been known that patients with angina of any kind tend to be of the highly strung, easily reacting type, and this is borne out by the fact that the symptom is said to be rare among the negroes and the Chinese, whose threshold for pain seems to be higher. A scientific basis for this observation is suggested by the work done by Dr. Wittkower and myself on the psychological make-up of patients suffering from heart disease with and without cardiac pain. The proportion of patients with some psychological abnormality is higher in the cardiac pain group. This increase is present both in angina of effort and in the functional group, but is higher in those patients with a functional type of pain. Following upon this a series of twelve cases has been treated by Dr. Wittkower psychologically, and the results seem to indicate that where a definite psychological abnormality exists the treatment of this is likely to help to diminish or to banish the cardiac pain.

Three Organic Diseases influencing Treatment

There are three organic diseases which interfere with the coronary circulation and which must be remembered in planning a course of treatment in angina of effort. These are coronary thrombosis manifested by angina of effort, angina of effort due to syphilitic aortitis, and angina of effort due to anaemia, whether pernicious or microcytic. Where angina of effort follows directly after a coronary thrombosis there is a very good chance of its disappearing completely during the subsequent twelve months or so, and the patient should be so informed. In the case of syphilitic aortitis manifesting itself by angina of effort the cardiac pain can often be cured by thorough anti-syphilitic treatment. This should consist of a six-weeks course of full doses of potassium iodide, 90 to 150 grains daily, a subsequent course of bismuth injections, and a final course of intravenous injections of neosalvarsan. This programme should be repeated, with intervals of two to three months' rest, until the Wassermann reaction becomes and remains negative. When angina of effort is due to anaemia, the pain nearly always completely disappears with the improvement of the blood count.

Thyroidectomy

The vast majority of all cases of angina of effort respond successfully to treatment on the lines described, but there remains a small group in which the cardiac pain is extremely severe and no improvement follows persistent treatment. In these cases some operative procedure may be justifiable. From a total of about 400 cases of angina of effort I have picked out fourteen as being suitable for thyroidectomy. In nearly every one of these the relief from pain has been striking, and this relief has lasted in the least successful case for a period of six months. The more successful cases have had periods of up to three years, during which time the pain has either vanished or has become so slight as to cause no serious inconvenience. The details of this procedure have been published elsewhere, but it should be remembered that so radical a measure should not be embarked upon without very serious consideration.

The chief indications for thyroidectomy would seem to be that the pain is extremely severe, that previous treatment has failed, that the pain shows no sign of decreasing, that the pain is not the result of a recent coronary thrombosis, that the patient is not adipose, and that there are no signs, clinically or electrographically, of grave disease of the heart muscle. It is possible that in the future omentopexy could be a means of successfully treating these patients, but the evidence available to date has not proved without doubt the usefulness of the measure as a method of general application.

Summary

The origin and symptoms of angina of effort are described.

Cases are classified into two groups and treatment in these is detailed, the necessity for a complete and sympathetic physical examination being stressed.

Points suggesting a good or a bad prognosis are discussed.

Concomitant conditions that accentuate the symptoms of angina of effort are subjects of survey, together with three organic diseases that influence treatment.

The indications for thyroidectomy are given.

Calcium Deficiency.—A diminished calcium content of the blood may be accompanied by normal, excessive, or diminished excretion of calcium in the urine. Treatment by calcium salts orally is rarely efficient. Injections of calcium have a transient effect only, but are useful in tetany and in similar manifestations. Treatment by irradiated ergosterol—8,000 to 10,000 rat units a day for about a month—gives good results in rickets and osteomalacia, and in tetany with calcium deficiency. A.T.10 is less valuable because it mobilizes the calcium at the expense of the bones.—Calcium Deficiency. J. Decourt.—*Ann. Méd.*, May, 1939, 45, 362.

INGUINAL HERNIA

A NEW OPERATIVE REINFORCEMENT

BY

A. SIMPSON-SMITH, M.Ch., F.R.C.S.

Surgeon to Out-patients, West London Hospital

Max Page (1934) stated that the recurrence rate in inguinal hernia was far greater than previously admitted, and in healthy metropolitan policemen, whose average age was 32, the rate amounted to 20.2 per cent. in indirect and 25.8 per cent. in direct varieties. Since this paper several carefully examined series of cases supporting Page's view have been published. Grace and Johnson (1937) record 1,032 cases, all over 50, with a recurrence rate of 25.8 per cent., Birkenfeld (1933) gives 28.49 per cent., Lyle (1928) 10.3 per cent., Fallis (1936) 8.25 per cent., and Block (1933), in 642 cases personally followed for two years, 34.8 per cent.

Fascia sutures have been of great service in repairing wide hernias, but even this method is not without defect, for Burdick *et al.* (1937) admit 29.1 per cent. of failures in a series of 975 fascial repairs. In addition, it is tedious and time-consuming to use this material. Ogilvie and Maingot (Maingot, 1937) have employed heavy floss silk loosely woven across the posterior wall of the canal to form a lattice. They claim that the minute fibres constituting the silk cords are readily absorbed, provoke little reaction, and have no tendency to encourage sepsis. Graham (1938), however, states that it is necessary to use fine silk, heavy braided silk being harmful.

Injection treatment alone, while of value in preventing hospitalization, is open to the serious disadvantage that twelve or more appropriate fluid quantities must be placed exactly in the right position. The difficulty of controlling the hernia throughout the treatment and the danger to testis, cord, or bowel by "blind" injections have compelled many surgeons to discard this procedure. What emerges from this method of treatment is the fact that experimentally and clinically selected sclerosing solutions can create a firm area of fibrous tissue.

The general disinclination of the public to accept herniorrhaphy is shown by the number of patients who are prepared to put up with the discomfort of a truss for the rest of their lives: one instrument firm in London manufactures no fewer than 3,000 spring trusses a week.

The present method aims at reinforcing a satisfactory operative repair with the adhesive barrier of the injection treatment.

Technique

The hernial sac is isolated and ligatured as high up as possible, a split salad-spoon facilitating this high excision. A Bassini repair operation is done, approximating the conjoined tendon to Poupart's ligament, either with two strips of external oblique, as in lacing up a boot and originally described by McArthur in 1901, or by the use of non-absorbable sutures. Salmon-gut, because of its lack of capillary attraction and its inability to absorb organisms, is probably safer to use than silk. Orthopaedic surgeons have preferred this material for years. A lozenge consisting of sodium psylliate in gelatin is then placed on the anterior wall superficial to the conjoined tendon but deep to the cord. The external oblique and skin are then closed in the usual manner.

Results

The first case was operated upon in March, 1938. At this time the sac was carefully isolated and, after division between double ligatures, the distal portion was filled with sclerosing fluid. The ball that resulted tended to slip about and was difficult to keep behind the cord. In the next case a slab of gelatin was used, and this proved to be much more convenient.

In all, twenty-three cases have been submitted to this operative reinforcement. Various strengths of sodium psylliate in different conveying materials have been tried. With moderate amounts of sodium psylliate a mild swelling of the wound has occurred, and has subsided in fourteen days. The distinct impression is gained that there is a plate of firm fibrous tissue around the operative site. With too strong solutions intense swelling and bruising of the skin are likely to follow, but even extensive reactions settle down within two or three weeks. Such reactions have not occurred in the later cases.

Conclusions

This is a preliminary report of a method which has not yet stood the test of time. Only the cold candour of a long series of cases will assess its utility. The small number already treated show a firm scar and encourage a further trial. A suitable conveying material that will liberate larger amounts of sclerosing fluid in minute doses over a long period of time is in preparation; this will increase the desirable fibrosis.

I am grateful to Dr. O'Neill and Dr. Shore, medical superintendents of Napsbury and Shenley Hospitals, for allowing me to select cases, and to Mr. Alex Rae, chief pharmacist of the Hospital for Sick Children, for his advice and for the preparation of the psylliate slabs.

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The Economic Intelligence Service of the League of Nations has just published a study entitled *Urban and Rural Housing,* containing a comprehensive account of the methods employed in a number of countries for improving housing conditions, with special reference to the cost involved and the results obtained. It is of particular interest at the present time, since it deals largely with housing problems raised after the war of 1914–18 and the attempts made to solve those problems in various countries up to the outbreak of hostilities in 1939. It should therefore appeal to all interested in reconstruction schemes at present or in the future. The countries dealt with are Belgium, the United Kingdom, Canada, Denmark, Finland, France, the Netherlands, Norway, Sweden, and the United States of America. The author was able to visit most of these countries and to investigate on the spot the practical difficulties encountered by the housing authorities; in addition he has co-ordinated the material published by or obtained from Governmental and municipal authorities and other sources. A chapter is devoted to each country, and the information arranged in such a way as to permit the reader to compare housing problems and the efforts being made to meet them in different circumstances. A special paragraph is devoted in the case of European countries to the problem of rural housing and the measures taken to improve the housing conditions of agricultural workers or other groups of the rural population. The report is published at 3s. 6d. by George Allen and Unwin, Ltd., 40, Museum Street, W.C.1.

CONSERVATION OF THE CERVIX UTERI IN OPERATIONS FOR PROLAPSE

A NEW OPERATIVE PROCEDURE

BY

J. W. A. HUNTER, M.D., F.R.C.O.G.

Honorary Gynaecological Surgeon, Manchester Northern Hospital; Senior Gynaecological Surgeon, Withington Hospital, Manchester; Honorary Assistant Obstetric Surgeon, St. Mary's Hospitals, Manchester

In reviewing current methods in gynaecology one observes a persisting hesitation to practise the first principle of surgery—preservation of function. A distinction should ever be drawn between women of child-bearing age and those no longer capable of reproduction. In the former, preservation or restoration of function should be our aim; in the latter, certain cure of symptoms by radical means is justifiable. There is a persistent hesitation to adopt planned conservative measures lest symptomatic relief should be incomplete, and there is failure to count the cost at which a radical cure may be purchased. Avoidable hysterectomies are still being performed for "tarry cysts," pus tubes, and even fibroids in comparatively young women, although many successful pregnancies after conservative treatments have been recorded.

The early masters in gynaecology were careful to preserve this distinction between case groups. In prolapse they tended to operate only in the more severe cases usually associated with older women, while pessary treatment was employed for the minor degrees of prolapse found in younger patients. They were conservative, too, in their attitude to lacerations and diseases of the cervix. The apparent success of amputation of the cervix, with or without colporrhaphy, may have caused the pendulum to swing too far in the direction of radical surgical treatment, and it is worth while to analyse some of the harmful after-effects of this change. Modern technique has brought with it wider accomplishment and greater safety, but it has also brought new dangers and new problems.

Cervical Amputation

Cervical amputation was first widely practised by the French surgeons. Huguier, stimulated by the work of Lisfranc, adopted amputation as a routine measure in all cases of procidentia. Marion Sims in 1866 advocated the operation not only for prolapse but also for hypertrophy and disease of the cervix. Sims believed that the operation did not interfere with child-bearing, and quoted two cases of normal pregnancy and labour after his operation. T. A. Emmet in 1869 reported his operation of trachelorrhaphy which he had devised in 1862. Twenty years later, however, he advocated amputation after the manner of Sims for many cases in preference to repair, partly because it was an easier operation and partly because of its more curative effect on symptoms. He then stated that amputation had no effect on fertility, pregnancy, or labour. J. D. Emmet in 1895 advocated a return to trachelorrhaphy in view of the ill effects sometimes found after amputation, a view contradicted by T. A. Emmet in 1897. Meanwhile Schroeder in 1878 and 1880 had devised and reported on 220 cases operated on by his method of circular amputation with every appearance of success.

About this time amputation of the cervix came to be associated with colporrhaphy as an operation for prolapse. In 1888 Cohn reported 105 cases of prolapse so treated by Olshausen and Schroeder, and about the same time Donald independently devised a similar treatment. In 1914 Fothergill modified the operation by combining amputation of the cervix with the anterior colporrhaphy, and his publication (Fothergill, 1921) of the excellent results obtained led to widespread adoption of his method for all types of prolapse.

Criticisms of Cervical Amputation

Audebert in 1898 was one of the first to draw attention to the ill effects of Schroeder's operation. In a comparison between pregnancies in the same women before and after amputation of the cervix he found this marked difference: before operation these women had twenty-two labours at term and five abortions or premature labours, whereas after operation they shared five labours at term, nine premature labours, and ten abortions. In addition he reported a high incidence of dystocia, often involving incision or dilatation of a stenosed canal. Leonard (1913, 1914), in an extensive analysis of the after-effects of cervical amputation on 128 cases at the Johns Hopkins Hospital, found that four-fifths of the women who might have been expected to become pregnant remained sterile. Of those who became pregnant 50 per cent. had premature interruption of pregnancy, and of those proceeding to term an even larger percentage had difficult and prolonged labours.

Sturmdorf (1916), having noted Leonard's findings, devised his new method of amputation of the cervix, which aimed at complete excision of the cervical mucosa to the internal os with preservation of the cervical muscle. Sturmdorf maintained that by this method disease could be eradicated without any interference with the polarity of the uterus.

Rawls (1921), analysing the same subject, found sterility in 58 per cent. of women after trachelorrhaphy, as compared with 72.6 per cent. after amputation of the cervix. Further, he found that amputation carried a disadvantage in that there were 18 per cent. fewer full-term labours, and 6.2 per cent. more spontaneous abortions occurred after amputation than after trachelorrhaphy. Rawls also noted that three Caesarean sections were necessary in 100 labours after cervical operations, and that relaceration occurred in 40 per cent. of this series.

Brandt (1933) described three cases of abnormal labour following amputation of the cervix—one by Sturmdorf's method and two by circular amputation. One patient died of rupture of the uterus, one developed a large vesico-cervical fistula as the result of rupture of a cervical scar, with extension into the bladder, while in the third Caesarean section was performed as no os uteri could be detected.

Hesseltine (1934) reported a case of labour at term following cervical amputation. After eighteen hours in labour there was no dilatation and no os could be found. Caesarean section was performed as rupture of the uterus seemed imminent, and actual spontaneous rupture of the lower segment occurred while the operation was in progress. Davis (1929) reported a similar case. Gonnet and Mermet (1933) reported another case of obstructed labour, with fatal termination. Many other cases could also be quoted from the literature.

Zoefgen (1936) had found high amputation so inimical to conception that he recommended the operation as a sterilizing measure. Novak (1936) criticized this statement, and quoted two cases of repeated abortion after the operation. He stressed the need for a careful statistical review of the results of amputation in women of child-bearing age.

Repeated Abortion following Amputation

My attention was first drawn to the possibility of repeated abortion as a sequel to cervical amputation by my late chief, Dr. Haig Ferguson. He had the care of a patient whose cervix had been amputated by T. A. Emmet, and who had seven subsequent abortions. Anxiety for an heir made her consent to remain in bed from the very start of a pregnancy, and in this way she had her first and only living child at seven and a half months. Sfameni (1925) recorded a case of amputation of the cervix for leucorrhoea after a normal confinement. This was followed by four successive abortions.

Recent Cases of Abortion

During the past eighteen months several cases of repeated abortion following amputation of the cervix have reported at my out-patient department.

Case 1.—Para 3. Colporrhaphy with amputation of the cervix at the age of 30. During the following six years she had five miscarriages, all necessitating curettage. Sterilization was performed owing to the disability resulting from the repeated abortions.

Case 2.—Para 3. Colporrhaphy with amputation of the cervix at the age of 26. She had four miscarriages in the four years following the operation.

Case 3.—Para 2. Amputation of the cervix at the age of 26. During the following seven years she had three miscarriages, at the sixth, fifth, and sixth months respectively, and came under my charge during the third abortion.

Case 4.—Para 2. Amputation of the cervix at the age of 30. Since operation she has had three miscarriages—one at four and a half months, one at the third month, and one at the fourth month.

Case 5.—Para 1. Colporrhaphy and amputation of the cervix at the age of 26 after one confinement. During the next seven years she had four miscarriages, at times varying from the second to the sixth month. Her only child died recently, and she was desperately anxious to have another. During her last pregnancy she was kept in bed in hospital from the eighth week, but in spite of this she miscarried at the fifth month.

Case 6.—Para 1. Amputation of the cervix at the age of 25. Patient was sterile for five years following the operation and then became pregnant. Before pregnancy the cervical stump had been found flush with the fornices and the uterine cavity only two inches long. At the fifth month the membranes ruptured while she was asleep. Two days later evacuation of the uterus had to be performed, as the cervix remained closed and the uterine content was becoming fetid. Considerable difficulty was experienced in dilating the cicatricial cervix.

Case 7.—Para 1. Amputation of the cervix six months after confinement. During the next eight years she had four miscarriages between the third and fifth months.

In these seven women twenty-four abortions had occurred, and practically every one was incomplete and required curettage. Previous to amputation only one abortion had happened in this series.

Recent Cases of Dystocia

I have also been able to collect a number of cases of dystocia after amputation of the cervix. In the past ten years I have had occasion to perform Caesarean section on five women, at or near term, for pronounced stenosis of the cervix. In three of these cases long and tedious labour failed to produce any dilatation and it was difficult to define a cervical canal. In one case a patient had complete suppression of lochia and developed pyometra. On the tenth day graduated probes were passed with difficulty and a pint of pus was evacuated from the uterus. A rubber tube was stitched into the cervical canal, and adequate drainage and a good recovery followed.

In collecting hospital statistics over a period of eleven years I have been able to find records of eighteen labours at or near term after amputation of the cervix, with or without colporrhaphy. In ten cases the delivery was normal. The other eight cases had serious dystocia: three were delivered by Caesarean section for cervical atresia, three had vaginal Caesarean section, and two had manual dilatation of the cervix with version and extraction. There were three maternal deaths, in each case due to extension of a cervical rupture into the lower uterine segment. One followed vaginal hysterotomy with forceps extraction, one after manual dilatation with version and extraction, and the third after breech extraction. All three deaths occurred in emergency cases—in one complete rupture had taken place, and the child was in the abdominal cavity on admission.

Operative Treatment of the Cervix

A study of the literature and the account of these recent cases force us to the conclusion that amputation of the cervix in a woman of child-bearing age may have one of these unfortunate results—namely, sterility, repeated abortion, premature labour, or serious dystocia. Leonard's figures for sterility, quoted above, are worthy of serious consideration, and large statistical follow-ups are urgently needed. The wastage and dangers involved in these repeated and often incomplete abortions require us to make a careful review of the whole question of cervical function and surgical procedure.

Cervical Repair

In regard to lacerations of the cervix we might at any rate consider a more extended use of Emmet's original operation of trachelorrhaphy. It is often possible, by excising two or more deep lacerations and carefully suturing the edges of the tears, to restore an extremely distorted cervix to an almost normal contour. During recent years I have employed this method on women of child-bearing age with increasing frequency, and have found the results extremely satisfactory, both as regards relief of symptoms and subsequent childbirth. True, the operation scars in the cervix not infrequently split open during delivery, but these can be resutured at the time; even if this is not done the operation has fulfilled its purpose in enabling the woman to carry her pregnancy to term. A more detailed study of statistics in relation to trachelorrhaphy will be the subject of a further paper.

Cauterization

In cases of cervicitis with wide erosion and numerous Nabothian follicles the use of cauterization in preference to amputation might be advocated. Brunet and Salberg (1938) report 538 cases treated in this way by the "nasal loop" cautery with excellent results. In studying over 1,000 cases of cervicitis in the Mayo Clinic, Masson and Parsons (1928) state that the cautery is as effective as amputation in the cure of leucorrhoea; that pregnancy occurs more often, miscarriages are less frequent, labour is more often normal, and subsequent lacerations less liable to occur. Roblee (1931) advocates a combination of cautery and electrocoagulation, and maintains that this procedure entirely supersedes amputation and is never followed by stenosis. Harriman (1929) reports a comparison of cases treated by cautery and electrocoagulation, and is strongly in favour of the latter method, and maintains that hypertrophied cervical lips may by this treatment be reduced to normal size. Ende (1929) criticizes cauterization by thermocautery because of the danger of subsequent cervical stenosis, but has obtained excellent results in 200 cases treated by diathermy.

During the past ten years I have treated a large number of cases of cervicitis by diathermy cauterization, and more recently by electrocoagulation. The results, which I hope to publish in detail later, have been extremely satisfactory. Cervical stenosis has been recorded after deep linear and radial cauterization, and I prefer superficial cauterization of the whole eroded area by diathermy followed by multiple stab cauterization at about a dozen points in the cervix, dependent on the extent of the disease. This is followed in a few months by a return of the hypertrophied lips to normal size, disappearance of the erosion, and disappearance or amelioration of the systemic and local symptoms.

In cases where there is gross hypertrophy, and where trachelorrhaphy or cauterization is unsuitable, amputation should be as shallow as possible, and high circular amputation should at all costs be avoided.

A New Operative Procedure for Prolapse

(*Figs.* 1 *to* 12)

In the case of prolapse in women of child-bearing age the problem is more difficult. The operation devised by Donald and perfected by Fothergill stands supreme in the surgical cure of prolapse, and for women past the menopause is unequalled in its perfect results. For women

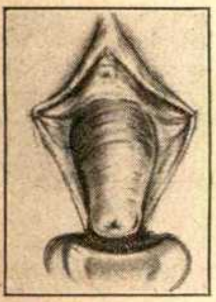
FIG. 1.

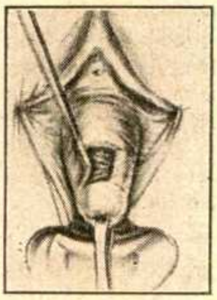
FIG. 2.

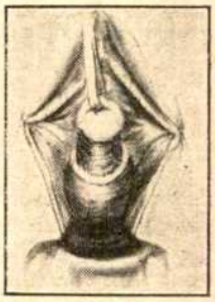
FIG. 3.

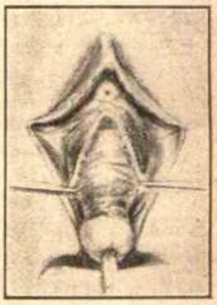
FIG. 4.

FIG. 2.—Two circular incisions are made round the cervix, about one inch apart, and a cuff of vaginal wall is dissected off.
FIG. 3.—A complete cuff of vaginal wall has been removed from the cervix.
FIG. 4.—A triangular flap is removed from the vaginal wall as in the Fothergill colporrhaphy. The apex starts just below the urethra, and the lateral incisions are carried downwards and outwards to the widest part of the upper circular incision round the cervix.

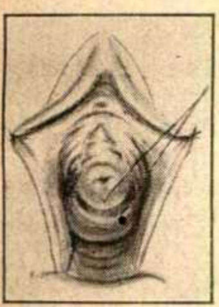
FIG. 5.

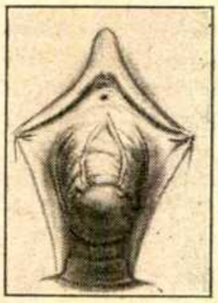
FIG. 6.

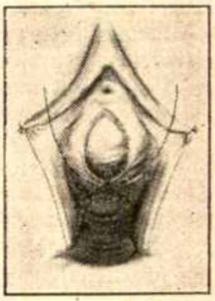
FIG. 7.

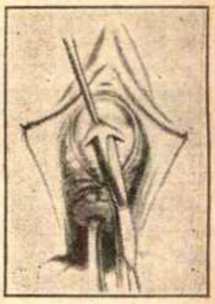
FIG. 8.

FIG. 5.—Starting posteriorly, interrupted sutures fix the cervix to the upper incision.
FIG. 6.—This shows the cervix almost completely sutured to the upper incision. The cervix and uterus are thus carried up to a higher level.
FIG. 7.—The cervix completely sutured to the upper flaps. The lateral angles of the vaginal flaps are joined together and to the cervix by a mattress suture.
FIG. 8.—If the uterus is displaced backwards the peritoneum of the utero-vesical pouch below the bladder is opened

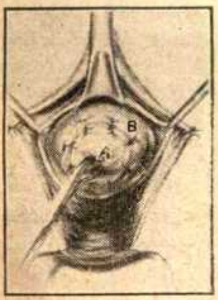

FIG. 9.

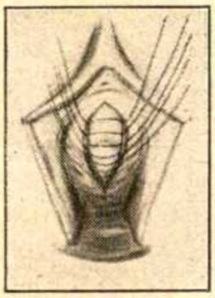
FIG. 10.

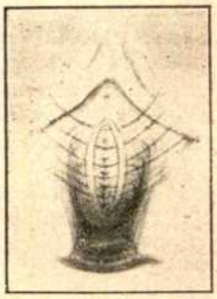
FIG. 11.

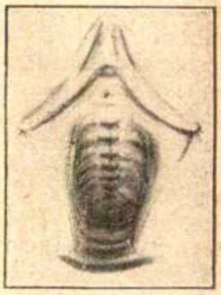
FIG 12.

FIG. 9.—The bladder is dissected upwards, and that part of the fundus uteri between the round ligaments, A, is fixed by interrupted catgut sutures to the peritoneum of the utero-vesical pouch, B.
FIG. 10.—Deep interrupted sutures are used to bring the pubo-coccygeus muscles and parametrium together on each side.
FIG. 11.—The anterior vaginal flaps are brought together by interrupted sutures and the anterior colporrhaphy completed.
FIG. 12.—The completed anterior colporrhaphy. The posterior colporrhaphy is then performed in the usual way: no illustrations of this are shown.

liable to further pregnancies, however, the amputation of the cervix, which is an integral part of the operation, may be disadvantageous for reasons we have seen, and because of this I have attempted to devise a modification suitable for young women which, while preserving the essentials of the Fothergill method, may yet conserve the cervix. The operation is applicable to those cases of prolapse in young women where there is no great degree of cervical hypertrophy, and where the total length of the uterine cavity to the external os does not exceed three to three and a half inches. It is applicable to that type of prolapse in which there is relaxation of all the uterine supports, the pelvic floor, and the vaginal walls, the uterus being at a low level in the vagina.

Technique.—Briefly the steps are these. A circular incision is made about half an inch above the external os, and another an inch to one and a half inches above this, and a complete circle of superficial vaginal epithelium is stripped off (Figs. 1, 2, and 3). A V-shaped excision of vaginal epithelium, as done in the ordinary Fothergill colporrhaphy, is then made, starting from just below the external urinary meatus and extending downwards and outwards to join at the lateral aspect of the upper circular incision (Fig. 4). The cervix is then stitched to the vaginal epithelium, starting posteriorly and working round to the front on each side, and thus the Fothergill principle of sliding the uterus up is maintained but with conservation of the cervix (Figs. 5, 6, and 7). The anterior colporrhaphy is then finished in the ordinary way (Figs. 10, 11, and 12), and the operation completed by posterior colporrhaphy and perineorrhaphy.

Unfortunately one finds in practice that in this operation the uterus tends to remain in the pelvic axis, and as at the same time in a young woman one has to be careful not to cause undue narrowing of the vagina, there may for this reason be some possibility of recurrence. One of the greatest advantages of the Fothergill operation is that the uterus tends to be brought into anteversion and so to be at right angles to the vagina, thus preventing any possible descent of the uterus; and, even if this anteversion does not always result, the scar tissue consequent on amputation of the cervix will almost certainly help to prevent any future tendency for the uterus to come down. For this reason a modification of the anterior colporrhaphy in the new operative procedure may be useful to antevert the uterus, and so lessen the chance of recurrence. This may be done by opening the anterior peritoneal pouch below the bladder, and stitching the anterior portion of the uterus at the level of the round ligaments to the peritoneum of the utero-vesical pouch as a step before performance of the anterior colporrhaphy (Figs. 8 and 9). This gives a more satisfactory result, and one case in which it was performed was followed by pregnancy and labour without any tendency to recurrence of the prolapse or retroversion. Perhaps an even better result can be obtained by anteverting the uterus, using the Alexander Adams method of suspension; but this involves a second incision, is a tricky operation, and adds somewhat to the time taken. May I stress that the object of bringing the uterus forward is not to cure the symptomless retroversion but to place the uterus at right angles to the vagina and so help to prevent recurrence of the prolapse.

I have performed this operation in nineteen cases during the past three years. This is a small number, but the severer degrees of prolapse are not common in young women, and in the minor degrees operation was not advised until after the menopause. The ages varied between 23 and 32; in ten of the cases vaginal fixation was combined with the anterior colporrhaphy, in one the colporrhaphy was supplemented by the Alexander Adams method of suspension, and in the remainder there was no associated backward displacement of the uterus requiring correction. The results have been uniformly satisfactory: there has been complete relief from symptoms, without any evidence of recurrence. One patient treated by the modified colporrhaphy with vaginal fixation has subsequently been delivered normally at term with no complications and no recurrence of the prolapse.

It seems presumptuous to suggest any improvement on that superb operation devised by Donald and Fothergill. Perhaps, however, its very success has led to its employment in cases for which it was scarcely devised, and, in view of its one limitation, the maintenance of the essential principles of the operation, but without its one possible disadvantage, may be worth consideration.

In conclusion it would appear that there is a very definite risk in pregnancy and labour after amputation of the cervix, and therefore, in the event of its being necessary to perform this operation on a woman liable to further pregnancies, she should be given instructions regarding the necessity for supervision during a subsequent confinement.

Summary

In gynaecology the necessity is stressed for subdividing cases undergoing surgical treatment into two groups—women of child-bearing age and those no longer capable of reproduction.

The literature of cervical amputation is reviewed, and various complications and harmful sequels of the operation are discussed.

A series of recent cases of repeated abortion following amputation of the cervix is reported.

A series of recent cases of dystocia following amputation of the cervix is recorded.

Methods of curing lacerated or diseased cervix, and prolapse, are suggested.

The technique of a new operative procedure for prolapse is given, with the results obtained.

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Clinical Memoranda

Pyloric Obstruction as a Sequel to Rammstedt's Operation

The following case seems of sufficient rarity and interest to be worthy of record.

CASE REPORT

A male infant, which I had delivered by Caesarean section six weeks previously, was admitted to the Fermanagh County Hospital on June 23, 1938, with a history of vomiting during the previous ten days. Its weight was then only 7 lb., whereas at delivery it weighed 7½ lb. The diagnosis of congenital pyloric stenosis was easily made because of the presence of visible gastric peristalsis and a palpable epigastric tumour, together with the characteristic regurgitant vomiting.

A Rammstedt operation was done under local anaesthesia. The pyloric tumour was noted to be rather large, an incision of about one and a quarter inches being necessary. There were no post-operative complications and the vomiting ceased at once, while the weight steadily increased to 9 lb. 6 oz. by August 13, 1938, seven weeks after the operation. At this point vomiting was again reported, at first once daily but later twice a day. Alteration in the diet did not have any effect, and the general condition of the infant progressively deteriorated. On August 25 gastric distension and peristalsis were observed after a feed, followed shortly by vomiting, and recurrent pyloric obstruction was diagnosed.

The abdomen was reopened under a local anaesthetic, and it was seen that the pyloric tumour had completely disappeared, the pylorus had narrowed down to the size of a lead pencil, and the scar was now only about half an inch long. There was no kinking at the pylorus, neither were there any adhesions. A small amount of ether was found necessary before a posterior gastro-jejunostomy could be performed, and again, fortunately, there were no post-operative complications. The vomiting ceased, and the weight had risen to 11 lb. 12 oz. on October 13, when the child was discharged home. He is now nearly 18 months old and weighs 25 lb.

HORACE T. FLEMING, F.R.C.S., F.R.C.S.I.,
Surgeon, Fermanagh County Hospital.

Pneumococcal Meningitis treated with Sulphapyridine

The successful use of sulphapyridine (M & B 693) in a case of pneumococcal meningitis is here recorded.

CASE REPORT

A young man aged 23 was admitted to the Royal Infirmary, Edinburgh, about 8 p.m. on June 7, 1939, with a twenty-four-hour history of headache, vomiting, semiconsciousness, and finally delirium. On admission his temperature was 102°, pulse 90, and respirations 36.

On examination the pupils were contracted, but were equal and reacted sluggishly to light; there was marked neck rigidity; abdominal reflexes were absent; there was bilateral exaggeration of knee-jerks and ankle-jerks. Babinski's and Kernig's signs were also present bilaterally. The patient was delirious and very restless, so that he was under constant observation by two nurses for the first eighteen hours. Lumbar puncture was performed. The cerebrospinal fluid was under a pressure of more than 300 mm.; it was very turbid, and contained Gram-positive cocci, mostly in pairs. As the organism appeared to be a pneumococcus, an intramuscular injection of 1 gramme of soluble sulphapyridine was at once given, but it was not repeated during the night owing to the restlessness of the patient, which continued in spite of 1½ grains of morphine and 1/25 grain of hyoscine in the first twenty-four hours.

The next day the organism was verified as being a pneumococcus, Type XIX. Lumbar puncture was performed the morning following admission, and after his bowels had moved the patient became less restless and was able to take 1 gramme of sulphapyridine orally, four-hourly. This dosage was continued for six days with no toxic effects, each dose being administered in milk in conjunction with 30 grains of sodium bicarbonate. The temperature fell to normal in forty-eight hours, and subsequently remained subnormal. The patient suffered from retention of urine during the first three days, but this was relieved by the administration of doryl hypodermically. On the second day after admission he was practically normal mentally and could give a clear history. By the tenth day neck rigidity had disappeared completely, and convalescence was uneventful save for persistent slight left-sided earache.

An interesting fact in this case is that the patient sustained concussion five years ago, resulting in the loss of hearing in his left ear. He has had attacks of left-sided earache since, and when examined on June 19 there were signs of an inner ear disease, which were suggestive of a direct intracranial spread of infection by way of the sheath of the eighth nerve. The accompanying table shows the course of the illness:

Day of Illness	No. of Lumbar Punctures	Quantity of C.S.F. Withdrawn	Appearance of C.S.F.	Cell Count per c.mm.	Total Protein mg. per 100 c.cm.	Chlorides mg. per 100 c.cm.	Globulin	Pneumococci Type XIX
1st	1 therapeutic	c.cm. 20	Very turbid					Present
2nd	3 „	70	„	10,000	400	662	+++	„
3rd	2 „	45	Turbid					
4th	1 „	30	Slight turbidity	250			+	Not present
5th	1 „	20	Faint trace of clot formation					
6th	1 „	10	Colourless	195	30	695	Slight increase	„
7th	1 „	5	„					
10th	1 diagnostic		„	30			No increase	„
20th	1 „		„	25			„	„

I am indebted to Dr. J. D. Comrie for permission to publish this case.

FRED. J. ROBERTSON, M.B., Ch.B.,
House-physician, Royal Infirmary, Edinburgh.

Pneumococcal Meningitis treated with Sulphapyridine

The following case of primary pneumococcal (Group IV) meningitis may be considered of sufficient interest to be placed on record.

CASE REPORT

On June 6, 1939, a healthy man aged 38 began to feel out of sorts, with headache and backache predominating. The headache was both frontal and occipital, and soon increased in intensity, causing loss of sleep. On the 8th he had diarrhoea and vomiting. He saw a doctor for the first time on the 9th, when the symptoms were thought to be those of an influenzal cold; his temperature was 103° and pulse 106. There were no physical signs in the chest.

On June 10 neck rigidity and a positive Kernig sign were observed. When I saw him on June 11 he was drowsy and looked toxic; his tongue was heavily coated with brown fur;

there was marked neck rigidity; Kernig's sign was positive on both sides; knee-jerks and ankle-jerks were absent; the blood pressure was 106/86, temperature 101°, and pulse 116. There were no physical signs in the chest, and the ear drums were normal. He had herpes at the inner end of the right eyebrow. A leucocyte count showed 15,400 cells per c.mm., 80 per cent. being polymorphs. A lumbar puncture was performed and turbid cerebrospinal fluid, under slightly increased pressure, was withdrawn. This showed 624 cells per c.mm., all polymorphs, and Group IV pneumococci were cultured. During the next twenty-four hours he took 9 grammes of sulphapyridine (M & B 693) by mouth; there was no vomiting. On June 12 the temperature was 100.6° and the pulse 100. The patient was still very drowsy and the tongue was dry and furred. Cerebrospinal fluid showed 4,200 polymorphs per c.mm.; pneumococci were present. During the next twenty-four hours 8 grammes of sulphapyridine were given by mouth.

On June 13 his temperature was normal and the general condition much improved. Cerebrospinal fluid showed 360 polymorphs per c.mm.; pneumococci were present. During the next twenty-four hours a further 5 grammes was given. On the 14th he was again drowsy and his tongue was still very dirty. The temperature was normal and the pulse 90. The cerebrospinal fluid was under very low pressure and contained a purulent clot; pneumococci were present. A leucocyte count showed 15,000 per c.mm. During the next twenty-four hours 5 grammes of sulphapyridine was given orally. On the 15th the temperature remained normal; the general condition again improved; the neck rigidity was less; knee-jerks and ankle-jerks were just obtained. The cerebrospinal fluid contained 104 polymorphs per c.mm.—culture was sterile. Altogether 27 grammes of sulphapyridine had been administered; the drug was now discontinued. Daily improvement was maintained and the temperature remained normal. The cerebrospinal fluid continued to be sterile and the cells gradually became fewer. On June 16 there were 108 polymorphs, and on the 18th 72 cells per c.mm.; lymphocytes were now reappearing. A leucocyte count on the 19th showed 11,400 cells per c.mm. On the 21st the cerebrospinal fluid was quite clear; pressure normal; 20 cells per c.mm., lymphocytes predominating. On the 23rd the patient looked and felt perfectly well; there was no neck rigidity and Kernig's sign was absent. On the 24th the cerebrospinal fluid was quite clear and the pressure normal; there were 8 cells per c.mm., all lymphocytes. A leucocyte count showed 8,600 per c.mm. Convalescence was uneventful.

COMMENTARY

A case of primary pneumococcal (Group IV) meningitis is described. Treatment was not begun until the fifth day of the illness: it consisted of repeated lumbar punctures and the administration of sulphapyridine by mouth, a total of 27 grammes being given. There was rapid response to treatment; in four days the cerebrospinal fluid was sterile, and within a fortnight it had returned to a normal cytology.

I am indebted to Surgeon Commander R. L. G. Proctor for the laboratory investigations.

J. G. HOLMES, M.D.,
Royal Naval Hospital, Haslar. Surgeon Commander R.N.

Prognosis in Neuroses.—Schou finds that the prognosis in neurotic patients who apply for compensation or pension is much worse than in patients not so economically interested. In the two groups followed up from three to eight years afterwards the recovery rate in the former was only about 50 per cent., as compared with 88 per cent. in the latter. Though this may to some extent be due to the fact that those who apply for pension are more severely ill than those who do not, a more important factor is the unfavourable influence of a pecuniary interest in illness.—Laboratory and Catamnestic Investigations into So-called Neuroses. H. I. Schou.—*Acta Psychiat.*, Kbh., 1938, 13, Fasc. 4, 383.

Reviews

WAR WOUNDS AND AIR RAID CASUALTIES

War Wounds and Air Raid Casualties. Articles republished from the *British Medical Journal.* With illustrations. Foreword by Lieut.-General Sir William MacArthur, K.C.B. (Pp. 256. 10s. 6d. net.) London: H. K. Lewis and Co. 1939.

The *British Medical Journal* has rendered a notable service in gathering together in a series of twenty-three articles a wealth of information upon war injuries gained in the last war. Only those who were engaged in that war from its earliest weeks to its conclusion can realize what a vast revolution in technique and in outlook is revealed in these articles, or by what slow and painful processes these methods were evolved. It is a necessary feature of all wars that their conditions should be altogether new, for surprise is the very essence of military strategy, but it means that the doctor as well as the soldier must be prepared to meet new problems and to face conditions which it is impossible entirely to foresee. In the present war it was the universal opinion that in its very first weeks we must be prepared to deal with many thousand casualties, and these not among the soldiers but among the civilian population. This terrible forecast has so far not come true, but no one can say what the future has in store. It would, however, seem certain that whatever happens we shall have to deal with large numbers of civilian casualties in addition to those which must inevitably occur in the field. Moreover, these casualties will for the most part be due not to gunshot wounds but to the effect of exploding bombs and falling masonry. We shall in fact be faced with conditions which in our experience are without precedent, although perhaps the war in Spain may give us some clue as to what to expect. It is, therefore, all the more important that we should have before us the experience of those who took part in the last war and who slowly evolved methods which we may use as a starting-point.

There are two things which impress one in reading these articles. The first is the astounding power of recovery of the human body if it is only given a chance. Wounds of the limbs which in former days would have meant immediate amputation, wounds of the abdomen which even to the boldest surgeon might well have seemed impossible, are handled as a matter of everyday routine and with complete success. The second thing which strikes one is the variety of methods adopted, each plainly depending upon the special skill of the surgeon who writes. Yet all these methods have but one aim in view: to remove all infection and all damaged tissue and place the part at rest. To one surgeon splints and extension are the whole secret of handling compound fractures, while to another a plaster case is omnipotent. To those, however, for whom these papers are intended such differences are not perplexing but are rather inspiring, for they surely point the way towards a success in the future still greater than that obtained in the past.

The articles deal not only with wounds but with the emergency medical services, psychological aspects of war, chemical warfare, and the effects of high-explosive shells and CO poisoning as one result. No one engaged in war service in any field can fail to gather from them information of vital importance to his patients, and we hope that no one will lose the opportunity.

H. S. SOUTTAR.

HEPARIN

Heparin: Its Chemistry, Physiology, and Application in Medicine. By J. Erik Jorpes, M.D. (Pp. 87; 16 tables; 12 figures. 7s. 6d. net.) London: Oxford University Press. 1939.

For a good many years after the discovery of heparin by Howell most investigators were doubtful whether it had any such physiological function as an anticoagulant as had been suggested for it by its discoverer. It was regarded rather as an artefact with useful properties than as a naturally occurring anticoagulant which might play a part in preventing intravascular clotting. In recent years much attention has been given to its study, especially in Best's laboratory in Toronto and in Jorpes's laboratory in Stockholm, and the result of these studies has been largely to confirm most of Howell's original views. Heparin seems to prevent the conversion of prothrombin into thrombin, by acting either on the prothrombin itself or on the kinase. Chemically it is interesting, as it is a polysulphuric ester of mucoidin and so related to some other polysaccharide substances with anticoagulant properties—that is, lignine sulphonic acids, chondroitin sulphuric acids, etc. All these have in common a high molecular weight and strong acidic groups. Owing to this property heparin is thrown out of aqueous solutions by such basic substances as toluidine-blue.

Heparin occurs not only in liver but in lungs, spleen, kidneys, and especially in the intima of the blood vessels, which stains purple with toluidine-blue in consequence. It is located in the Ehrlich mast cells which lie along the intima and which probably secrete heparin into the circulating blood. Injection of peptone into the blood stream causes a release of this heparin and so renders the blood incoagulable. Heparin is now obtainable in pure form and is highly active. It produces no general physiological effects, even on intravenous injection, and has many applications both in the laboratory and in the clinic. Among the latter the chief are its use as an anticoagulant in blood transfusion, either by heparinization *in vitro* or by heparinization of the donor, and its undoubted value in the prevention or treatment of thrombosis. Very striking are the results of intravenous heparin injections in thrombosis of the central vein of the retina; in some cases normal vision was restored, whereas most untreated cases progressed to blindness.

The book is well prepared, and, although rather academic, should serve to attract attention to a subject which has been somewhat neglected in this country.

CARE OF CANCER PATIENTS

Cancer Handbook of the Tumor Clinic, Stanford University School of Medicine. Edited by Eric Liljencrantz, M.D. (Pp. 114; 50 figures. 14s. net., 3.00 dollars.) London: Oxford University Press; Stanford University, California: Stanford University Press. 1939.

This book consists of material assembled for postgraduate instruction at Stanford University School of Medicine. Its aim is to present essential facts briefly and uncontroversially but in sufficient detail to equip practitioners for the efficient care of cancer patients through the stages of suspicion, diagnosis, consultation, and treatment. It is remarked, wisely, that educational drives to instruct the public are useless unless the family doctor, who usually first sees the patient, is prepared to act decisively when consulted. His efforts should be directed to the recognition of early cancer and the avoidance of all acts of commission or omission which might worsen the prognosis. The statements that the specialists likely to be called should be consulted before the course of treatment is decided and that hastily selected treatment often spells the doom of the cancer patient will receive approval. After short introductory discussions of the production of cancer, its habits of spread, methods of diagnosis, and the principles of radiation therapy, the book describes the diagnosis, treatment, and prognosis of the forms of cancer most commonly encountered. For the most part the advice given is in accordance with current practice in this country. The insistence on the desirability of, and indeed necessity for, biopsy will not meet with universal approval, but the authors carry out biopsy under conditions which permit immediate operation when necessary.

In some respects the book scarcely reaches the standard which might be desired for postgraduate instruction; some of the sections contain no more information than should be in the possession of senior students; others, while helping the practitioner to understand the rationale of treatment, should not be allowed to obscure the desirability of obtaining the most expert aid available.

MANAGING THE BABY

The Single-Handed Mother. By Lindsey W. Batten, M.B., M.R.C.P. With a preface by H. G. Wells. (Pp. 186. 5s. net.) London: George Allen and Unwin. 1939.

Dr. Lindsey W. Batten has hit on a new idea, and has found a novel way of helping *The Single-Handed Mother* by writing a book of this name, introduced and rightly praised by Mr. H. G. Wells, who confesses that this role is one he has not played in his not uneventful career. "No book can be a substitute for a doctor," states Dr. Batten, but this is the type of volume which the practitioner can confidently advise his maternity patients to buy and study before and after the arrival of the baby. The sections on breast-feeding are particularly good, and it is a happy feature that nearly double the space is given to natural methods of feeding than to the use of the bottle. A chapter on management is full of wise hints and sound advice. Two concluding sections called respectively "Bad Habits" and "Problems and Anxieties" will help many a mother to solve worrying puzzles of child development which are alarming rather than serious.

Dr. Batten's style is clear, his teaching definite and rational, and throughout the volume it is obvious that not only has the author a wide experience of children in health and disease, but he has lived in close contact with a nursery of his own, and he has a real appreciation of the difficulties which face the young mother who has no help and no expert nursing advice ready to hand. The volume deserves a wide circulation, and medical practitioners would themselves learn something from its contents.

AN EXPOSITION OF GENERAL PHYSIOLOGY AND BIOLOGY

Man the Slave and Master. By Mark Graubard. (Pp. 366. 10s. 6d. net.) London: J. M. Dent. 1939.

The "jacket" of Dr. Mark Graubard's book prints three enthusiastic testimonials—from Professor Lancelot Hogben, Dr. Paul De Kruif, and Sir Arthur Keith, who writes that the book is "worthy of Mr. J. B. S. Haldane at his best." Whether Professor Haldane would feel flattered by this comparison is a delicate question, but it may certainly be said that more than half of the book is an admirably clear exposition of the present state of knowledge of general physiology and biology; Professor Haldane himself could hardly write a better elementary account of modern genetics. The chapters on anthropology and the history of culture also deserve praise. Of the remainder of the book we cannot speak so enthusiastically; it too frequently illustrates the truth of a remark made on page 343: " Saddening indeed is the remarkable intensification of arrogant intellectual cocksureness and ensuing intolerance in recent years." According to Dr. Graubard, scientific thinkers in biology, sociology, and anthropology first appeared in the second half of the nineteenth century. " Scientific thinking means in brief that if we desire to study any aspect of reality, information can be obtained only from a careful study of relevant facts " (p. 287). " Reality," we are informed (p. 68), is something of which man becomes aware " by means of sensations," and " sensations," according to page 67, are " arbitrary biological and psychological phenomena, products of our central nervous system." A few pages earlier Dr. Graubard wrote with some pity of the philosophers who had tried to answer such questions as—What is a sensation? How is it created? And " not without sadness and despair " of those who still studied their attempts. One such attempt was this:

> " The general character of sensation in all its forms is to be found in seeing that sense-perception is that which is receptive of the forms of things sensible without their matter, just in the same way as wax receives the impression of the seal without the iron or the gold of which it is composed and takes the figure of the gold or bronze but at the same time not as bronze or gold." (Aristotle, *De Anima*, ii, 12.)

This may not satisfy us; we may prefer the argument of Socrates (*Theaetetus*, 12 et seq.), but why dubbing sensations arbitrary biological and psychological phenomena should be thought a more scientific or successful attempt than those of Plato and Aristotle is not clear. The prescientific philosophers, again, were interested in human temperament and classified temperaments in many ways; modern psychologists have thought them not wholly wrong. Dr. Graubard, however, has no use for these distinctions. " By temperament," he says, " we mean the threshold of an individual's sensitivity." *Simplex munditiis.* It is not surprising that Dr. Graubard's anger is deeply excited by Freud, who, it seems, " displays an ignorance of biology amazing even in non-biological writers when he asserts that all instincts are associated with a feeling of pleasure." His " method of reasoning has nothing in common with science." " Freudianism is indeed unsound from the standpoint of biology, psychology, and anthropology. It is neither an approximation to truth nor a stimulating guess, but mere gossip and folly."

The fact that Dr. Graubard is not well acquainted with some departments of knowledge relevant to his theme does not, however, diminish the value of his exposition when he writes on subjects he understands.

DIETETICS

Diet in Health and Disease. Edited by Sir Humphry Rolleston, Bt., G.C.V.O., K.C.B., M.D., F.R.C.P., and Alan A. Moncrieff, M.D., F.R.C.P. The *Practitioner* Handbooks. (Pp. 383; 2 figures. 10s. 6d. net.) London: Eyre and Spottiswoode. 1939.

In the fourth volume of the series of the *Practitioner* Handbooks entitled *Diet in Health and Disease* is collected the series of articles which have appeared in the *Practitioner* on this subject, with an appropriate introduction by Professor Cathcart. The articles themselves have been revised and new matter added, and their collective value enhanced by a masterly survey of practical dietetics contributed by Professor Mottram. This first chapter is of absorbing interest and clarity and contains a special table of the vitamin and mineral values of protective foods which will be much appreciated.

The advance in scientific knowledge on the subject of nutrition has been so rapid that the busy doctor has no easy task in keeping pace with it. There must always be periods of delay between scientific discovery and its practical application. The first lag is between the laboratory and the general body of the profession, and the second between the doctor and the public. Anything which will shorten the first will have a still greater effect on the second. The need to improve the general standard of nutrition in this country is recognized as a national problem which will not be solved until the nation through the family doctor is familiar with the fundamental principles on which good nutrition is founded.

Most of us are familiar with the demand of the patient for rules of diet. Few of us can be satisfied with the advice we give or the list of " may take " and " may not take," however well they seem to serve the occasion. Too often the opportunity for instruction of the patient on intelligent lines is lost. This book should go far to remedy this state of affairs and will fill a long-standing gap on the doctor's bookshelf.

Notes on Books

All those who are wont to express strong views on the subject of the influence of the cinematograph on the minds of children should read RICHARD FORD'S *Children in the Cinema* (George Allen and Unwin, 7s. 6d.). As a rule these views are expressed with a violence in direct proportion to the ignorance of the subject. So far as we know this is the first occasion on which a careful survey has been made of the subject from all angles; and, taking things all round, it is quite clear that the cinema does more good than harm to children as a whole. Of course, there are a few children who are better for not seeing cinemas at all, more who ought not to go too often, others who should not go at certain periods of their life, and others for whom films should be very carefully chosen. It is clear, however, that children develop very strong views on what they like and what they won't have at any price. They go to special children's matinees to be entertained, and very properly resent any attempt at moral uplift under the guise of " a nice film." The real essential from the child's point of view is action, and " musicals " and child stars come a bad last in their order of preference. Such unbiased medical opinion as is available is quoted, and it is clear that films do not put ideas into children's heads which are not there already, though they may suggest methods of action whether these are desirable or not. All who are interested in children and/or in the films should read this book, and if they do it will command a very wide public.

Jordans Income Tax Guide, 1939–40 (Jordan and Sons, 116, Chancery Lane, W.C.2; 6d., by post 7d.) represents an attempt—and on the whole a successful attempt—to compress the essential facts with regard to income-tax assessments and allowances into the limits imposed by the low price charged for it. The second Finance Act of this year has laid down the rates of tax and alterations in allowances which will apply to 1940–1, and these changes have been set out in comparison with those effected in 1939–40. We doubt, however, the advisability of using the inside of the cover for that purpose instead of a sheet in the body of the booklet. One or two points might usefully be reconsidered for another edition. For instance, it is twice stated that income tax under Schedule A is payable in one sum on January 1, whereas since the rate was raised to 5s. 6d. last year some modifications of this rule have been in force for tenants paying tax and deducting it from their rents; with the rise in the rate to 7s. this provision becomes somewhat important. In the notes on Schedule E, expenses are stated to be allowable if "necessarily" incurred in the performance of the duties; the statutory rule says "wholly, exclusively, and necessarily," which is rather more restrictive. In explaining surtax, it might be made clearer how the "income" surtaxed is arrived at—that expenses allowed for income tax are also allowable for surtax, and that such charges as interest are allowable for surtax.

John Wright and Sons, Ltd., of Bristol have published a seventeenth edition (making the 197th thousand) of Warwick and Tunstall's *First Aid to the Injured and Sick: An Advanced Ambulance Handbook.* It is edited by Dr. F. C. NICHOLS. The chief feature of this edition is the more complete account given of gas poisoning in warfare, with a new section on the civilian respirator, giving full details of the apparatus and of how to fit, use, and take care of it. The price is 2s. 6d.

That Mr. W. G. MCMINNIES'S *Signpost* is a useful guide to those seeking pleasant resting-places in the country is shown by its having reached a fifth edition. It will be all the more useful now that Continental resorts will be impossible for the present and immediate future. To a medical man such a guide is very helpful in choosing a place to which he can "evacuate" old, delicate, or nervous subjects. Helpful too for the doctor himself when he is lucky enough to obtain a holiday and sufficient petrol to reach one of these havens. A photograph of each recommended hotel is given, with a brief account of its special features, not omitting the important point of the tariff, about which so many books are coy. The index gives a list of the games and sports available at each. Altogether an attractive and practical work, illustrating the great improvements that have been made in the country hotels and inns since the dawn of the motor age. It is published by Simpkin Marshall at 3s. 6d.

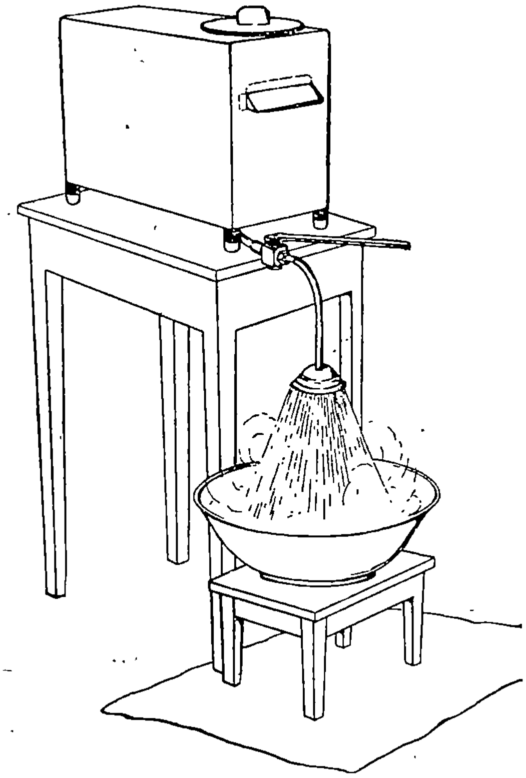
Preparations and Appliances

PORTABLE RESERVOIR WITH SPRAY

Dr. LACHLAN GRANT (Medical Officer, Ballachulish and Kinlochleven) writes:

I have been experimenting with an apparatus designed to afford in the patient's home, at the bedside, an aseptic wash somewhat comparable to that obtained at the elevated spray faucet of an operating theatre. The apparatus consists of a light rectangular-sided tank 20 inches long, 8 inches broad, and 12 inches deep, made of stainless steel or of vitreous enamelled metal, thus rendering it more impervious to corrosive lotions. The tank weighs about 10 lb., and has a capacity of four gallons. There is an opening in the upper surface large enough to admit the hand for cleansing the tank. This opening is also used for filling purposes, and is covered by an easy-fitting cap. A draw-off tap with spray outlet is fitted to the reservoir, and this tap is operated by means of a light aluminium lever handle easily detached and controlled when in use by the elbow. Another type of tap which may be fitted is an all-metal one with a hinged one-way joint. The latter is operated by raising or lowering the nozzle as required. The flow from both taps is by gravity only. The apparatus, which may be fitted into a case about the size of an ordinary midwifery bag, can easily be carried to the bedside. For use the tank should be filled with pure water at any suitable temperature. This may be done direct from a kettle or ewer. If a lotion is being employed this should be poured from a jug or may even be mixed in the reservoir. The cap having been replaced, the tank should then be elevated, to ensure the necessary gravity flow from the spray, by placing it on a small table or other support—a fairly large round or oval basin should be placed below the spray to collect the waste.

The apparatus is light, compact, and easily transportable by hand, cycle, or car. It obviates the risk always involved by washing in still water or lotion in a basin. The hands, or swabs, can be cleansed under a running supply of uncontaminated water or antiseptic lotion at the bedside. The water or lotion in the tank keeps warmer for a longer time and is less liable to aerial floral contamination than is the case with water or lotion lying exposed in an open basin. By washing under running water any gross or septic material from the skin surfaces flows away, and organisms are thus not reapplied to the cleansed surfaces. An aseptic or antiseptic wash can be achieved with a minimum expenditure of fluid. This is also an advantage where water is scarce, in areas with low annual rainfalls or in other special circumstances.



The reservoir should be part of the armamentarium of any practitioner engaged in domiciliary midwifery or surgery, whether or not water is laid on in the houses at which he attends. It should also prove as useful to veterinary surgeons and to nurses in the course of their work. It might be installed in all motor and air ambulances where surgical or obstetrical emergencies may have to be dealt with, and it should form part of the equipment of all first-aid posts under A.R.P. schemes. Its usefulness in field dressing and casualty stations will readily be appreciated, as will its advantages to practitioners in the Tropics and aboard ship, on account of its economy of water. The tank has been made for me by Messrs. Archibald Young and Sons, Ltd., of Forrest Road, Edinburgh.

EPHYNAL

Ephynal "Roche" (Roche Products, Ltd., Welwyn Garden City) is a synthetic form of vitamin E; its chemical name is α-tocopherol acetate. This synthesis was achieved by Karrer in 1938 and hence represents one of the latest of the triumphs of vitamin chemistry. Animal tests have proved that the activity of the synthetic compound is equal to that of the natural form.

The importance of vitamin E has been proved repeatedly in recent years. Observers have claimed up to 80 per cent. of successes in the prevention of abortion. It is being tried tentatively in cases of male impotence and testicular atrophy. Beneficial results are reported also in the treatment of premature infants.

Nova et Vetera

SIDELIGHTS ON ENGLISH MEDICINE IN 1677-9

RECORDS OF THE EAST INDIA COMPANY

A Calendar of the Court Minutes of the East India Company for the years 1677–9, published under the patronage of His Majesty's Secretary of State for India (Oxford, 1938), contains interesting passages throwing additional sidelights on medicine in England in the last quarter of the seventeenth century.

Some Medical Worthies of the Age

The names of the following British doctors, probably long forgotten or unknown to the present century, occur in the pages of these original records.

Doctors who stood security to candidates seeking Company's service: (1) Dr. John Micklethwaite, Doctor of Physic. He stood security for John Blunden, factor (August, 1677). The same Dr. Micklethwaite was allowed in October of the same year to ship on "expectation" to the value of 100 pieces of eight on paying freight. (2) Dr. King stood additional security to James King, writer (August, 1677). (3) William Butler, a London apothecary, acted as security for James Butler (January, 1678). (4) Dr. John Archer, security for Reuben White, writer (January, 1678). (5) Dr. Samuel Annesley for Samuel Annesley, jun., a factor (March, 1678). (6) Dr. Edward Master, security for Henry Odinden, writer (December, 1678).

Doctors mentioned as stockholders of the Company: (1) Dr. Joseph Tayler in the year 1677. (2) Dr. Peter Barwick in the year 1679. (3) Dr. Elliot in the year 1679.

Examiner of candidates for appointment as surgeons in India before February, 1677: Mr. Page, surgeon. He was paid 20 shillings for examining two surgeons who were sent to India in the service of the Company.

Apprentices: Each surgeon going out to India was permitted to take only one apprentice, "a boy of 16 years and not under."

Handbook of Medicine, provided to Company's doctors: The Court directed the Secretary on January 2, 1678, to send to Fort St. George through Mr. Orde a copy of *Culpeper's Dispensatory.* "The Pharmacopiea Londenensis was translated into English in 1649 by the famous Herbalist and quacksalver Nicholas Culpeper" (Garrison). Salmon's *New London Dispensatory* was published in 1678.

The Company and Hospitals

Bethlem Hospital: The cellars of this hospital were leased to the East India Company for twenty-one years at £100 per annum. In May, 1678, the committee for pepper warehouse were asked to negotiate with the governors of Bethlem Hospital for the cellars proposed to be let out to the Company as regards "money to be spent on fitting for use and the clamour that may arise if the scent of pepper shall annoy patients."

The Hospital at Poplar: The origin of this hospital as gleaned from old records is summarized as follows in the Court minutes of the year 1679, in the course of a statement regarding the reasons for paying the minister and schoolmaster from the funds of the hospital.

"In 1625, the Court of Committee took into consideration means of relief for wounded mariners who had been maimed or fallen into decay in the Company's service and instructed their paymasters to deduct 2d. in the pound from all seamen's wages employed by them towards the said relief and in order the sooner to raise a stock, 2d. in the pound was also to be allowed by the committee, from their gratuities and from the salaries of all officers of the Company, only very poor men to be exempted from paying the said sum. This went on well, for on March 31, 1626, £60 were given into the hands of the treasurer, to erect a hospital for the relief of mariners."

In May, 1627, a suitable house in Poplar was purchased for £360 and then fitted with conveniences at a cost of £350. Twenty poor were to be maintained there. More money accumulated as time went on, through collections and through amounts bequeathed by employees of the Company. In 1679 there was nearly £3,600 in the hospital account in the books of the Company, and the committee ordered that a book should be maintained for the accounts and concerns of the hospital.

Vizagapatam. D. V. S. REDDY.

OSLERIANA

Sir William Osler was a great humanist, a fine teacher of clinical medicine which he based on morbid anatomy, and an excellent writer. The medical faculties in the Universities of McGill in Canada, of Johns Hopkins in the United States, and of Oxford in this country bear the impress of his culture and show that he was able to get things done without apparent effort. In each he made a tradition in medicine which is lasting and growing.

The *Bibliography of Sir William Osler's Publications*[1] is a key to his manner of working and shows how he attained his ends. It is based on Miss Blogg's chronological bibliography and is edited, revised, and indexed by Dr. Maude Abbott. Dr. Henry Barton Jacobs in his foreword tells for the first time the story of the origin and distribution of the well-known Osler plaque which was executed in Paris in 1903 (although Dr. Jacobs says 1905) by Mr. F. Vernon, the sculptor. The book also contains a reproduction of Mr. Seymour Thomas's portrait of Osler, which was painted in 1908. The volume is very useful for reference and will be greatly appreciated by the numerous friends who hold Osler in affectionate remembrance.

MEDICAL ICONOGRAPHY

Iconography is the study of the work of painters, engravers, sculptors, and medallists to portray the features of those who ought to be held in remembrance. Collectors of medical portraits have been many from the days of "the princely Mead" to our own times, but few have made a scientific study of their collections. Professor Richard N. Wegner of Frankfort-on-the-Maine, therefore, has broken somewhat new ground in his recently published *Anatomenbildnis,*[2] and has produced a useful book of reference, though he has limited himself to the great anatomists who lived after Vesalius and has written in somewhat difficult German. He has gathered together portraits of men whose names and works are more familiar than their personal appearance, and considers them from the artistic side as sixteenth century woodcuts, copper-plate engravings of the seventeenth century, etchings and lithographs of the later period. He gives well-executed examples of each method, with a short account of the individual and of the artist by whom he was portrayed. The method might well be adopted for portraits of the great physicians and surgeons, but it requires a knowledge of art, a technical acquaintance with the processes employed, and literary ability. The three qualifications are not often combined as they are in the person of Professor Wegner, so medical iconographers are not common.

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[1] *Classified and Annotated Bibliography of Sir William Osler's Publications.* Edited by Maude E. Abbott, B.A., M.D., LL.D. Second edition. (Pp. 163; frontispiece. 2.25 dollars.) Montreal, Canada: The Medical Museum, McGill University. 1939.

[2] *Das Anatomenbildnis: seine Entwicklung im Zusammenhang mit der anatomischen Abbildung.* By Richard N. Wegner. (Pp. 199; 105 figures. 18 Swiss francs). Basle: Benno Schwabe. 1939.

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LYMPHOCYTIC CHORIOMENINGITIS

The five years which have elapsed since Armstrong and Lillie discovered the virus of lymphocytic choriomeningitis have seen a considerable advance in our knowledge of this virus and of its natural history. It was at first thought that this discovery had solved the problem of the aetiology of so-called acute aseptic meningitis. This belief was based on the facts that the first cases from which this virus was isolated presented the clinical picture of aseptic meningitis and that the changes evoked in experimentally infected animals were confined, so far as the central nervous system was concerned, to the meninges and choroid plexus; little or no involvement of the brain or cord occurred. It was not long, however, before doubt arose as to the validity of this assumption. Those cases from which the virus was first isolated in this country by Findlay, Alcock, and Stern[1] in 1936 had symptoms clearly indicating cord involvement. A fatal case described by Viets and Warren[2] in the following year showed definite encephalitic changes, and more recently MacCallum and Findlay[3] have recovered the virus from a patient whose clinical state might well have passed for poliomyelitis. Obviously this virus is capable of attacking both the meninges and the tissues of the central nervous system in man; acute aseptic meningitis is merely one of the forms the infection may assume. Furthermore, it seems clear from the investigations of Baird and Rivers[4] that all cases presenting the clinical picture of acute aseptic meningitis are not due to this virus, for in only a portion of the cases of this clinical type could they obtain evidence that the virus of lymphocytic choriomeningitis was the causal agent. It would appear, then, that the virus of Armstrong and Lillie can produce infections in man of varying degrees of severity, in some of which the meninges alone are involved, while in others there are deeper-seated changes in the central nervous system. And from what we know of other infectious diseases it would be expected that in addition to these clinically obvious infections milder atypical or even asymptomatic ones would occur. This, in fact, has been shown to be the case. Wooley, Armstrong, and Onstott[5] have found specific antibodies for the virus of choriomeningitis in the serum of individuals giving no history whatever of meningitis or encephalitis, and both Laigret and Durand[6] and Kreis[7] have observed that infection in human volunteers may result only in pyrexia and slight general symptoms. How widespread infection with this virus is in man we cannot say with any degree of certainty. The findings of Wooley and his co-workers certainly suggest that it is commoner than might be thought, for 11 per cent. of 1,248 sera from different parts of America were found to contain antibody for choriomeningitis virus. It is only by means of such serological surveys that a clearer idea of the extent of human infections with this virus will be obtained, and until recently the only test available for the purpose has been the neutralization test. Since this test entails the use of animals it is a relatively complicated procedure and therefore of somewhat restricted utility. But Smadel, Baird, and Wall[8] have now shown that a soluble specific antigen—separable from the virus itself—is present in the tissues of animals infected with the virus of lymphocytic choriomeningitis, and that the presence of antibody to this antigen in the serum of convalescent animals and human beings can be demonstrated by the complement-fixation test. Not only is this observation of much interest, since it parallels what has been found in some other virus infections such as rabbit myxoma and epidemic influenza, but it provides a relatively simple specific serological reaction suitable not only for the diagnosis of suspected cases but also for large-scale serological surveys.

The source of the human infections with this virus still remains unsettled; in fact, from the very outset the story has been a rather confused one. Armstrong and Lillie isolated the virus in the first instance from a monkey which had received monkey-passage material from a line of animals started with material from a human case of St. Louis encephalitis, and they also found serological evidence of infection with the virus of lymphocytic choriomeningitis in some other of their experimental monkeys, including one which had been infected with poliomyelitis. It was McNair Scott and Rivers[9] who first brought forward unquestionable evidence of having obtained the virus direct from human cases, though Armstrong and his colleagues had already shown that specific antibodies for the virus were to be found in man. Meanwhile Traub[10] had shown that this virus was responsible for a virulent epizootic in certain of his mouse stocks at Princeton. Rivers and McNair Scott[11] compared their strains of virus of human origin with those isolated by Armstrong and Lillie and by Traub, and showed that they were all serologically identical. Similar infections in laboratory mouse stocks have since been described in different parts of the world, and we know from the important investigations of Traub[12] that the virus is present in the urine and nasal secretions of the infected animals, and that infection can occur in intra-uterine life.

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[1] *Lancet*, 1936, **1**, 650.
[2] *J. Amer. med. Ass.*, 1937, **108**, 357.
[3] *Lancet*, 1939, **1**, 1370.
[4] *Amer. J. publ. Hlth.*, 1938, **28**, 47.
[5] *Publ. Hlth. Rep.*, Wash., 1937, **52**, 1105.
[6] *C. r. Acad. Sci.*, Paris, 1936, **203**, 282.
[7] *La Maladie d'Armstrong, Chorioméningite Lymphocytaire*, Baillière et Fils, Paris, 1937.
[8] *Proc. Soc. exp. Biol.*, N.Y., 1939, **40**, 71.
[9] *J. exp. Med.*, 1936, **63**, 397.
[10] *Science*, 1935, **81**, 298.
[11] *J. exp. Med.*, 1936, **63**, 415.

It would seem clear, both from the work of Traub and of others, that infection in mouse stocks due to this virus may be of varying virulence, sometimes even wholly inapparent, so that the greatest care must be taken to ensure that the mice used for experimental work are free from natural infection. The possibility that the mouse was the source of human infections was early considered. Rivers and McNair Scott[11] discussed this possibility, and inclined rather to the view that infection of laboratory mouse stocks was more probably of human origin. But recent work by Armstrong and Sweet[13] indicates that human infection from mice is far from being a remote possibility. They have demonstrated the presence of the virus of lymphocytic choriomeningitis in three out of five mice trapped in two houses, in both of which a human case of choriomeningitis had occurred. And since the interval between the patient falling ill and being removed to hospital was only four days, it seems unlikely, to say the least of it, that the mice had contracted their infection from the human cases. A rodent source of infection in some human cases is therefore more than likely, and this probability is heightened by the fact that human cases occur either singly or in small isolated groups with little or no indication of man-to-man spread. This, however, might be more apparent than real, for we do not know what percentage of the infected develop clinical disease, and the possibility that man-to-man infection does occur can by no means be ruled out. Recent observations by MacCallum and Findlay do, in fact, support this possibility. They have isolated the virus from the nasopharynx in one case even some weeks after recovery, and if the virus is commonly to be found in the nasopharynx, persisting in that situation in some cases after recovery, spread by droplet infection will almost certainly occur.

Reference has been made to the fact that only a proportion of the cases of acute aseptic meningitis appeared to be due to the virus of choriomeningitis. One would expect, none the less, that those not due to the Armstrong-Lillie virus would be of virus aetiology. A recent paper by MacCallum, Findlay, and McNair Scott[14] brings some confirmation of this, for from two cases of the Wallgren clinical type the authors isolated a virus which, though resembling the virus of choriomeningitis, differed from it in certain respects. This new virus had the same animal pathogenicity range as the Armstrong-Lillie virus, and it produced the same pathological picture in the animals. But it was unrelated serologically to choriomeningitis virus, and from preliminary filtration experiments appeared to be about three times as large. This latter observation suggests that the new virus is not just a new serological type of choriomeningitis virus, and the authors suggest for it the name of "pseudo-lymphocytic choriomeningitis." It is not absolutely clear from the findings, as MacCallum and his colleagues admit, that these two strains of the new virus were of human origin, but further work will no doubt clear up this question and settle its relation to the virus of Armstrong and Lillie.

FINANCIAL SURVEY OF LONDON HOSPITALS

The King Edward's Hospital Fund for London has issued a "Statistical Summary"[1] of the income and expenditure of the 146 voluntary hospitals in its area, which covers a radius of eleven miles from St. Paul's Cathedral. In ordinary times we should have seized upon these 115 tables, each table with about twelve columns of figures in which receipts and costs and work done are analysed to the accuracy of fractions, and have brought out some interesting and perhaps useful comparisons and contrasts. But as it is these figures come like an echo from a forgotten world. It seems incredible, as so many other things do, that six months ago these precise allocations and balances were matters of enormous interest to those in charge of hospital administration. A whirlwind has now scattered these statistics, and many people are wondering whether the old hospital structure, so ramshackle and yet so easy to find one's way about in when one got the clue, so full of anomalies and yet so manifestly working to the public good, will ever be reassembled. To vary the figure of speech, the lights have changed at the crossing, and before they come back to green the road ahead may be very different from what it was before. Some are even asking whether voluntary hospitals as we have known them can survive. Take, for example, the last table of all in this compilation, giving particulars of pay-beds, their number, description, and weekly charges. The highest charge of all—at one of the teaching hospitals—is fifteen guineas a week, but three other teaching hospitals and one non-teaching charge twelve guineas for some of their private beds. The more usual charge starts from a minimum of six guineas at the teaching hospitals and four guineas at the smaller general and special hospitals. In the economic readjustment which will follow the war one wonders whether enough people who can afford these sums will be found to occupy the 2,200 such beds which are available. On the other hand, the hospitals are making no exorbitant profits from their pay-beds. The expenditure on pay-beds in 1938, taking the whole 146 hospitals, was £389,339 as against a revenue of £464,976, a profit of about £34 per bed, which may not be unreasonable. If each bed is occupied by twelve patients in the year it means that the hospital makes only about £3 per patient.

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[12] *J. exp. Med.*, 1939, 69, 801.

[13] *Publ. Hlth. Rep.*, Wash., 1939, 54, 673.

[14] *Brit. J. exp. Path.*, 1939, 20, 260.

[1] King Edward's Hospital Fund for London, 10, Old Jewry, E.C.2. (1s. net; 1s. 5d. post free.)

London hospitals in this last pre-war year were not in a very comfortable financial situation. Of the teaching hospitals only the London, Charing Cross, and King's College had surpluses, and of the nine hospitals without medical schools but with a complement of 200 or more beds, all had deficits. The smaller hospitals seem to have been more prosperous. Of twenty-nine general and cottage hospitals with fewer than eighty beds eighteen had surpluses totalling to £23,000, and although the other eleven had deficits the aggregate of deficits was not more than £5,000. In voluntary gifts also the smaller hospitals on the whole seem to do better than the larger. Thus the gifts to the "big twelve," although they amounted to half a million pounds, were down by £18,000 on the amount received in 1937, whereas all the other hospitals combined managed to maintain their voluntary gifts at practically the same level for 1938 as for the year before.

But the service which the voluntary hospitals render stands out impressively from these figures. In their 19,000 beds they gave treatment last year to 300,000 in-patients, while their out-patients numbered two million. To-day they are playing, or have made themselves ready to play, an important part in the war emergency scheme. Buildings have been adapted, equipment overhauled, staff enlisted and trained. Although the Government is contributing towards the cost of beds reserved for casualties, the hospitals are still, as they were before the war, largely dependent on voluntary contributions for the maintenance of adequate provision for the civilian sick. Their restoration to normal activity with the declaration of peace will again call for large expenditures, and in the meantime the national purse will have been impoverished, and the appeals for those actually suffering in the war will be severely competitive with ordinary hospital appeals. In recent years some of the ablest brains in medicine and in the business world have been devoted to hospital organization in the belief that the voluntary principle was worth cherishing. They will be needed even more in the years ahead, if the system is to continue within a new social order.

THE HEALTH OF LONDON BUSMEN

The evidence before the Court of Inquiry appointed to examine the stoppage of the London Central Omnibus services in 1937 showed clearly that there was a widespread feeling among the busmen that the conditions of their work were injurious to health. The Court, however, concluded that no satisfactory proof of that belief had been placed before it but that there was certainly a case for investigation. Accordingly the Minister of Labour arranged for the subject to be fully reviewed by representatives of three bodies—the London Passenger Transport Board, the Transport and General Workers' Union, and the Medical Research Council (whose representatives were Sir David Munro and Dr. Bradford Hill), under the chairmanship of Sir John Forster. The results of their deliberations, now published,[1] show clearly that great pains have been taken both to assess any specific effects that the working conditions may have upon health and to suggest practicable means of ameliorating them. All the available statistical data relating to the health of drivers and conductors have been examined, the actual conditions of work have been surveyed, the present-day views of the men's representatives on those conditions have been elicited, and a considerable body of expert medical opinion has been taken upon the conditions which might be regarded as especially conducive to gastric disorders—the forms of illness to which the busmen say they are particularly liable. The statistical evidence is admittedly limited, and though the members of the committee were able to make some slight additions to it they were unable to suggest any method by which it could be placed upon a really precise basis. Figures relating to the time lost by the bus crews from illness of all kinds showed no material change in the incidence of illness between 1931 and 1938, in spite of the increasing density of traffic in this period and the men's argument that the "intensity of their work" had consequently risen. If the nervous tension involved in the busmen's duties has increased, as might well be believed, it is not reflected in the available figures relating to sickness absenteeism. On the other hand, Bradford Hill's report to the Industrial Health Research Board[2] showed some relative excess of gastric illnesses among the London bus workers compared with the tramway workers, and a similar result is shown in a comparison made in the present report between the bus drivers and conductors and the maintenance workers in the London Passenger Transport Board's employ at Chiswick. Exploring, in the light of the medical evidence given, the features of bus work that might lead to such a susceptibility to gastric illness, the report lays particular stress upon two factors —namely, the irregularity of the hours of work and meal times, and the nervous tension that may be involved. With regard to the first, the irregularity is indeed marked. The men's shifts of duties change as frequently as every week. A more stable system unfortunately introduces other disadvantages — for example, a prolonged period of work on heavier duties —but, impressed by the medical evidence placed before it on this point, the committee suggests that the Board and the Union should consider whether less frequent changes are not in fact practicable. It also concludes that some spells of duty are definitely too long, and earlier meal reliefs in such cases should be aimed at. The times allowed for meals were not, it seems, specifically complained of by the busmen, but, in view of their statements relating to the general strain of their work and the medical evidence relating gastric illness to nervous anxiety and temperament, a reduction is suggested in the number of meal periods at present affording less than forty minutes. For similar reasons much stress is laid upon the importance of proper rest pauses between journeys, which, it is advised, should be kept habitually in view in the construction and revision of working schedules. By such means nervous and physical fatigue might well be reduced. On the more debatable question of the advisability of a reduction in the hours of work no conclusion was reached, and no evidence could be obtained to show whether any part in the production of gastric illness is played by the absorption by the men of carbon monoxide and other fumes.

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[1] Ministry of Labour. *The Health of London Central Busmen.* H.M. Stationery Office. 1s. net. Pp. 49.

[2] Report No. 79. An Investigation into the Sickness Experience of London Transport Workers, with Special Reference to Digestive Disturbances. 1937.

The omnibus services are a necessary part of London's life and give employment to a large body of men—some 20,000 drivers and conductors alone. Their health is an important problem in industrial medicine. Although highly abnormal conditions of work unfortunately prevail now—some of which will probably decrease and some increase the demands made upon the men—it is to be hoped that the parties to the industry may still be able to take cognizance of the proposals made in this report and to act upon them so far as is possible.

PERURETHRAL PROSTATIC RESECTION

Twenty-nine valuable papers by American and British writers[1] throw much helpful light on the question of perurethral resection of the prostate, often less correctly called transurethral resection—less correctly because the resection is done through, not across, the urethra. The perurethral route for attacking the prostate is originally European and over 100 years old, but the modern method of removing prostatic strips by means of an electric current passed through a wire loop is American and but ten years old. To American enthusiasm also is due the credit for popularizing this operation. The almost irresistible force of this enthusiasm met an almost immovable object in Europe's perhaps too stolid conservatism. The result was generally beneficial, for, on the one hand, unprogressive complacency was stirred, and, on the other, to reverse and revise Canning's dictum, the Old World was called in to redress the prostatic balance of the New. However, several articles in this excellent symposium show that criticism of perurethral resection is by no means confined to this side of the Atlantic. For instance, the uninitiated might conclude from the fact that one large American clinic employs the perurethral route almost exclusively that this route is the best, or that this particular clinic considers it the best. Actually, an illuminating American comment provides an alternative explanation of this apparent preference: "The urological department has hitherto been purely a diagnostic clinic, with its members neither trained nor allowed to perform surgical operations. It is easily seen, therefore, why this clinic does only transurethral procedures." Further shrewd comment, referring to the average stay in hospital after perurethral resection as being from three to seven days, contrasts this period with that of healing, which takes at least three weeks, and, in partial explanation of the fantastically low mortality reported from some quarters, points out the natural tendency of statistical mortality rates to be low in proportion to the shortness of the stay in hospital. Thus, deaths from cardiac failure, sepsis, pneumonia, embolism, etc., which are included in the mortality statistics of suprapubic prostatectomy, are not included in those of perurethral resection owing to the patients' previous departure from hospital. Again, transatlantic authors quote the statistics of life insurance companies, which show that "of 100 men at the age of 60, about thirty will die before they reach 70 years of age. In other words, the average mortality will be 3 per cent. each year, though less of course in the early sixties and greater in the late sixties. Between the ages of 70 and 80 the mortality will average 5 per cent. each year." These figures are intended "to give heart to those who have a mortality from any surgical procedure and to warn those whose mortality rate for transurethral resection is soon going to be less than the expected unmolested death rate." Two further criticisms are that whereas perurethral resection has not eliminated any of the previous complications of prostatic surgery it has added one—urinary extravasation from a ruptured bladder—and that the new operation has been followed by a greatly increased sale of penile clamps for incontinence. Such refreshing candour does much to counterbalance the extravagant claims made for perurethral resection, which nevertheless has won for itself an undeniable place in prostatic surgery, more especially in the treatment of the smaller enlargements of the prostate, particularly those of the "middle lobe"; of the various fibrotic affections of the bladder neck, including the so-called median bar; and of certain prostatic carcinomata.

CONSERVATIVE TREATMENT OF GAS GANGRENE

Hitherto radical surgery, chiefly in the form of early amputation and the provision of widespread drainage, has been considered essential in the treatment of gas gangrene, but it now appears that a change in this viewpoint may be desirable. It has been claimed that combined irradiation with x rays combined with sulphanilamide therapy may so control the infection as to render amputation or even surgical measures of any kind unnecessary. The most recent support for this claim is made in a paper by R. L. Sewell[1] of Rochester, New York, who states that J. F. Kelly in 1933 was the first to advocate irradiation in gas gangrene and that Kelly's and other collected cases which have been treated by irradiation now number 160 with fourteen deaths (8.8 per cent.). There are obvious difficulties in making a comparison between radical and conservative treatment, inasmuch as amputations are performed only in the fulminant case, whereas in any particular instance infection is not always proven, as positive cultures of *Clostridium welchii* may be the result of contamination of wound exudate. Moreover, where several measures—such as injections of serum and irradiation and sulphanilamide—are used, it is not possible to decide how effective any single one of these is. It is quite likely that the effect of sulphanilamide on the secondary streptococcal infection plays an important part. Further work on the conservative treatment of gas gangrene is needed.

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[1] *Urol. cutan. Rev.*, Feb., 1939.

[1] *Surgery*, 1939, 6, 221.

"THE BEST PHYSIC"

The organized public health services of the present day safeguard the citizen of any modern well-directed community against many bodily ills which would otherwise beset him. This security, though good, is not all, for it still depends upon the manner in which the individual orders his life whether he attains to that degree of health which makes life worth living. It is thus the fate and duty of every man to be to some extent his own doctor. This theme is developed by Dr. V. Heiser in his most recent work.[1] He aptly expounds his doctrine both by precept and by the example of his own experience, for, as he quotes from Bacon, "a man's own observation, what he finds good of, and what he finds hurt of, is the best physic to preserve health." Yet in the case of food, even where a man finds hurt, he may be slow to change. Age-long racial food habits, no matter how injurious, have a tendency to persist. Immigrants to the United States, Italian, Chinese, Spanish, or Russian, learn a new language more quickly than a new diet. In the matter of beverages too there may be the same unreasoned tenacity. England is a tea-drinking country not because she thinks that tea is best but in consequence of the early tea monopoly of the East India Company. Her daughters, Canada, Australia, and New Zealand, have dutifully followed her example. The people of the United States, who prefer coffee, do so not because coffee is essentially better but because the Boston tea-party turned them against tea. As regards exercise it is Dr. Heiser's view that most people do not get enough of it mainly because their daily work does not compel them to take it. He himself, when in New York, goes for a half-mile swim at his club before breakfast, and in the country he plays tennis. He admits that golf has a longer outdoor season than either tennis or swimming, and that it possesses the merit of drawing a man from drinking and smoking in the clubhouse into the air and sunshine, but he accounts it an old man's game. Bicycling and horse-riding win his approval. Of fishing, the tarpon and the trout excepted, he has no great opinion. He favours the practice of skating, and recalls with pleasure—as who would not?—the charm of ice-waltzing in Canada on gala nights of winter. The author rightly claims credit for American air-conditioning with its finely adjusted thermostatic and other controls. He cites as its crowning achievement—or last straw—that in a Chicago theatre, when a bouquet of roses is thrown upon the stage, a charge of essence of rose is simultaneously injected into the main air-intake duct, so enabling the entire audience to share the fragrance! As Dr. Heiser lives robustly so also he writes robustly, bringing to his task that *mens hilaris* which, according to the mediaeval adage, is one of the three basic requirements for self-doctoring.

VITAMIN E

A booklet entitled *Vitamin E* gives the record of a symposium held last April under the auspices of the Food Group (Nutrition Panel) of the Society of Chemical Industry. This is a collection of papers on vitamin E given by workers who are themselves engaged on the researches reported. The chemical structure and properties of tocopherol were dealt with by Professor A. R. Todd, Professor P. Karrer, Dr. A. Emmerie, Dr. Lester Smith, and Mr. R. Bailey. The physiological action of vitamin E and the consequences of vitamin E deficiency were dealt with by Professor J. C. Drummond, Dr. Karl E. Mason, Dr. S. W. F. Underhill, Dr. T. Moore, Miss A. M. Copping, and Mr. A. L. Bacharach. The clinical and veterinary uses of wheat-germ oil and vitamin E preparations were dealt with by Dr. P. Vogt-Möller, Dr. E. Shute, Dr. D. W. Currie, Dr. C. Macdonald, and Professor F. J. Browne. The academic work on vitamin E is proceeding rapidly, but it is greatly to be regretted that so little controlled work on the clinical use of vitamin E has been carried out. In spite of the claims of some clinicians to have obtained good results from the treatment of habitual abortion and threatened abortion (what exactly is the stage of threatened abortion that yields to a dose of vitamin E?) by prescribing vitamin E, it remains to be shown how many women after one or two abortions have produced a living child without any vitamin E therapy—only then can it be determined whether vitamin E is essential for the human mother as it is for the rat. The booklet is obtainable from the general secretary of the Society of Chemical Industry, Clifton House, Euston Road, N.W.1, at the price of 5s., post free.

We are asked by the Medical Research Council to point out that the pamphlet *Blood Transfusion Outfit*, to which reference has been made in several recent communications to the medical journals, is not a publication in the ordinary sense and has not been placed on sale. It is merely a memorandum of instructions relating to the particular forms of apparatus for taking and giving blood which have been supplied to the four Emergency Blood Transfusions Depots in the Home Counties and to various hospitals in the London sectors. It has been printed as a matter of convenience for distribution to blood transfusion officers at the centres to which its applicability is limited.

The Thomas Vicary Lecture will be given at the Royal College of Surgeons of England by Sir Walter Langdon-Brown on Thursday, November 30, at 3 p.m., and the Bradshaw Lecture by Sir James Walton on Thursday, December 14, at 3.30 p.m.

The next session of the General Medical Council will open on Tuesday, November 28, at 10 a.m., when the President, Sir Norman Walker, M.D., will take the chair and deliver an address.

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[1] *You're the Doctor.* By Victor Heiser, M.D. London: Jonathan Cape. (8s. 6d.)

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

BURSITIS

BY

L. R. BROSTER, O.B.E., M.Ch., F.R.C.S.

A bursa may be defined as a cavity lined by serous membrane. Bursae are formed either by dilatation of the lymphatic spaces or as a result of a localized effusion into the tissues. They contain a small quantity of serum. Their primary function is to permit of free movement and lessen friction between the hard and soft tissues of the body, especially where such movement is subjected to pressure. They exist as normal structures in many parts of the body —in the subcutaneous tissues over freely moving parts, over such bones as the patella or olecranon, or in the region of joints under the tendinous insertions of strong muscles. In the latter position a bursa may be formed by a hernial protrusion of the synovial membrane of the joint, and will then be in free communication with the joint cavity. It is important, therefore, to determine whether such a bursa has been involved either primarily, or secondarily by direct extension from the joint, by any pathological lesion.

Normal bursae occur at certain places with fairly regular anatomical accuracy, such as the prepatellar bursa and the olecranon bursa. On the other hand, where the soft tissues overlying bony prominences are subjected to exceptional and intermittent pressure secondary or adventitious bursae are formed. Structurally these bursae are similar to normal bursae except that their walls become thick and fibrous from prolonged irritation of the soft tissues, and the lining becomes shaggy and polypoid, especially from deposits of fibrin and unabsorbed blood clot. Adventitious bursae may occur in unexpected parts of the body, and are more constantly found among workers in special occupations. Thus large subaponeurotic bursae may be found under the scalp of Billingsgate porters and those who are accustomed to carrying baskets on their heads.

The so-called Covent Garden " hummy " is a bursa over the vertebra prominens. Tailors acquire bursae over their external malleoli from sitting with their legs crossed. Deal runners develop a bursa over their shoulder. Among non-occupational bursae the most numerous are those of the feet resulting from pressure by badly fitting shoes. The best example of this is the adventitious bursa which develops in association with hallux valgus. Here a bunion results from pressure by the shoe on the exposed head of the first metatarsal, and a bursa forms between the hardened skin and the calloused bone. Similar bursae occur over all bony prominences arising from malformations or displacements. For instance, a bursa may develop over the cuboid in talipes equinovarus. A particularly painful type of bursa is the one which forms under a hard corn. The typical position is over the head of the first phalanx in hammer toe or over the corresponding points of the three outer toes when these are in a flexed position. These little bursae are liable to infection, which may spread to the joint or bone. Unless the pressure is removed recurrent bursitis ensues.

The treatment is to pare off the corn, expose the bursa, and cauterize the bursal endothelium with carbolic on a sterile tapered match-stick, or excise the corn and bursa under local or gas-and-oxygen anaesthesia. Perhaps the classic example of an adventitious bursa due to a friction of soft tissues over bone is the one which forms over the cartilaginous cap of a cancellous exostosis. This should be removed at the same time as the exostosis. A small bursa sometimes appears over the head of the radius, and results in pain. It is mentioned as one of the causes of the so-called " tennis elbow." Bursa formation may also take place when hard structures such as cartilage or bone move over soft parts. Examples of this type occur under the hyoid. A bursa here may be mistaken for a midline dermoid or a thyroglossal cyst. A bursa may also form under the movable scapula, between it and the chest wall. The bursa is apt to become very large and to give difficulty in diagnosis.

Diagnosis

As a result of continued irritation and trauma a bursa becomes distended with fluid ; it is hot to the touch, and tender and painful when the part is moved. The skin covering it assumes a dusky red colour, and is movable over the bursa. On palpation there is fluctuation, and when situated superficially it transilluminates. When grasped between the fingers it is not freely movable owing to attachment to the underlying bony prominence. When bursitis is recurrent the walls of the sac become thick and fibrous, the lining membrane shaggy and polypoid. This perhaps is the most common condition. It is not unusual for haemorrhage to take place in a bursa, and deposits of fibrin and old blood clot adhere to its walls and cause obliteration of the cavity. In these circumstances the bursa becomes more solid to the touch, and fluctuation and transillumination will not be obtained. Haemorrhage is more likely to take place in the blood diseases and in haemophilia. When bursae are deep-seated and large their diagnosis may be doubtful. In these cases a needle of fairly large bore should be inserted and the typical fluid aspirated.

The Principal Bursae

The following is an account of the more important bursae which are encountered in the various parts of the body. In the region of the knee-joint, a particularly movable part, they are numerous.

Prepatellar Bursa.—Normally two or three sacs lie in front of the patella. When exposed to irritation by friction, fluid is secreted and the bursa becomes distended. It presents itself as a globular swelling over the patella about the size of half a tennis ball. The skin covering it is warm and red ; it fluctuates and transilluminates. It is fixed to the patella, and if the quadriceps is relaxed the patella will move from side to side when the bursa is moved. If the swelling forms over the proximal portion of the patella the condition is known as " housemaid's knee " ; if the swelling appears over the distal portion of the patella or over the patellar ligament, it is commonly known as " parson's knee." These bursae arise over that part which is most exposed in kneeling. Old charwomen from their occupation are particularly apt to develop the chronic fibroid form of prepatellar bursitis: as this bursa is liable to gummatous infiltration a Wassermann test should be done to differentiate the two.

The subpatellar bursa lies under the patellar ligament, and partly over the head of the tibia and the knee-joint, with which it does not communicate. It shows as a bulging on either side of the patellar ligament with the knee in full extension, and the patient cannot stand with the leg fully extended. It may push the ligamenta alaria backwards into the joint and simulate the condition of an internal derangement of the internal cartilage or a loose body in the joint.

The subcrureus bursa, when present, communicates with the suprapatellar synovial pouch and really forms part of the knee-joint. Its secretion of fluid will therefore run *pari passu* with that of the joint, and its presence is determined by an exaggerated fullness in the region of the suprapatellar pouch.

The semimembranosus bursa lies between the insertion of the semimembranosus tendon and the inner head of the gastrocnemius. It presents as an oval fluctuating swelling limited on its outer aspect but more free and less defined towards the inner aspect of the popliteal space. As in the majority of these periarticular swellings, it becomes tense in extension and flaccid on flexion of the knee. Enlargement of this bursa is often secondary to an intra-articular lesion, such as osteo-arthritis or tuberculous disease, and the condition of the joint should be ascertained before treatment is undertaken. Owing to its proximity to the popliteal vessels it may push the artery superficially, but the pulsation is not expansile in character as in aneurysm.

The popliteal bursa is a bursa arising from the synovial membrane of the knee-joint surrounding the intra-articular portion of the popliteal tendon. It gives rise to a rounded swelling behind the external condyle of the femur deep to the biceps tendon and the ilio-tibial band. It has to be differentiated from a bicipital bursa, which lies lower down between the biceps tendon and the external lateral ligament. Both these swellings may be mistaken for a cyst of the external cartilage.

A bursa is sometimes found beneath the insertion of the semitendinosus and gracilis, and produces a swelling over the upper and inner surface of the shaft of the tibia.

The psoas bursa lies between the tendon of insertion of the psoas muscle and the hip-joint, with which it usually communicates. Distension of this bursa gives rise to a deep-seated swelling presenting on the inner side of Scarpa's triangle. It is tense on extension of the hip-joint and flaccid on flexion. When painful it is the cause of flexion of the thigh, one of the symptoms associated with psoas abscess and hip-joint disease. Before any question of aspiration is entertained it must be remembered that an obturator hernia produces a swelling in this region. An enlarged psoas bursa may be found in association with osteo-arthritis of the hip-joint and tuberculous disease.

Subgluteal Bursa.—This bursa lies between the tendon of insertion of the gluteus maximus and the great trochanter of the femur. It is present in the condition known as clicking or snapping hip. When painful it causes abduction and eversion of the lower limb, a symptom seen in the first stage of tuberculous disease of the hip-joint, from which it should be differentiated. Indeed, the bursa itself is apt to be the seat of tuberculous disease quite independently of this infection within the joint. Owing to the lax muscular planes in this region the bursa may become enlarged, and if abscess formation takes place it burrows extensively among the lax tissues.

Ischial bursae when painful must be removed, and the chronic form of bursitis here must be differentiated from a gummatous bursitis, as this is one of the bursae liable to specific infection.

In the region of the *tendo Achillis* two bursae resulting from shoe pressure may be found. There is a bursa between the skin and the Achilles tendon, which is liable to infection from continued rubbing and excoriation of the skin over the heel. The other bursa is deeper and lies between the insertion of the Achilles tendon and the upper part of the posterior of the os calcis. It gives rise to a soft swelling on either side of the tendon. It is prone to tuberculous infection. It does not communicate with the ankle-joint, but may simulate an arthritis of this type in that region. The swelling, however, remains localized. In the upper limb there are only two bursae of any consequence.

The olecranon bursa is commonly found among miners and students. It forms a red, painful, fluctuating, and translucent swelling over the olecranon process, and does not communicate with the elbow-joint. It is particularly exposed to trauma. Septic infection may cause superficial necrosis of the bone, but it is unlikely to spread to the joint.

The subdeltoid bursa is situated between the deltoid muscle or the acromion process and the great tuberosity of the humerus, and does not communicate with the shoulder-joint. It causes an increased fullness to the rounded contour of the deltoid, but does not transilluminate, because of the thickness of this muscle. When painful it restricts the movement of abduction. It is liable to gonococcal and tuberculous infection.

Treatment of Simple Bursitis

In treatment the first consideration is to obviate or prevent any cause of irritation or pressure that has given rise to the bursitis, with the object of preventing a recurrence, which leads to chronic bursitis. In superficial bursae particular attention should be paid to the condition of the skin. If chapped and dirty or cracked it should be thoroughly cleaned with ether soap and disinfected with spirit or iodine for at least twenty-four hours. Neglect of this simple precaution may be fraught with serious consequences. Bursae have a rich supply of lymphatic vessels, which become dilated in simple bursitis. Organisms from a hidden focus in the skin reaching these vessels will spread exceedingly rapidly, either obtaining access into the blood stream, with consequent septicaemia, or spreading locally, involving the underlying bone or joint. Apart from these minute skin abrasions, infection may take place from lymphatics draining any area of local sepsis which may be present at the same time as the bursitis. By taking precautions against these, simple bursitis will subside with rest and fomentations or some form of counter-irritation such as blistering or painting with iodine or strapping over Scott's ointment. If the effusion is clear and painful, and it persists, aspiration with a wide-bore needle or small-sized trocar and cannula under strict antiseptic precautions may be employed.

The same treatment may be followed in dealing with chronic bursitis. For recurrent and troublesome bursitis the only satisfactory treatment is complete excision of the sac, making sure that the endothelial lining has been entirely removed. When a bursa, such as the semimembranosus bursa, communicates with a joint the neck leading to the joint should be closed by ligature. The incision should be planned so as not to leave the scar over the points of pressure. For example, in the removal of prepatellar bursa it should be made at the side of the bone.

Complications of Bursae and their Treatment

Subcutaneous injuries result in haemorrhage into the cavity of the bursa, constituting a haematoma, which may either suppurate or absorb, leaving the cavity full of adhesions from fibrinous deposits and polypoid fringes from the organization of blood clot. The skin over the bursa will be bruised and transillumination will be lost; the edges of the bursa will feel thickened, and fluctuation will only be obtained over the centre of the swelling. This part must be kept at rest and the skin be cleaned and sterilized. Threatened suppuration, as evidenced by throbbing pain, heat, and pitting on pressure from oedema, must be treated by prompt incision and drainage, and the wound left to heal by granulation tissue. In haematoma of the prepatellar or olecranon bursa it is advisable to make sure that there is no underlying fracture of the bone.

Wounds may be caused by splitting of the tissues over the bursa through a direct fall on the underlying bone, or by penetrating injuries from without. The result is the escape of bursal fluid, which may prevent adequate healing. This will necessitate removing the bursa entirely, or opening up the cavity freely, scraping out the lining tissue, and allowing it to heal by second intention.

Acute suppurative bursitis may originate in the above way, especially if the skin is allowed to heal over a small wound. More commonly this condition arises as the result of subcutaneous injury to a chronically inflamed bursa which becomes filled with blood clot. Pus forms and may track to the surface, or sepsis may become diffused into the tissues around it. There is swelling and induration round the bursa, and in these circumstances the original site of infection may be overlooked. It is important not to mistake this condition for an acute arthritis of a neighbouring joint, and to make an incision and provide drainage from the bursa as soon as possible. Neglect to do this may lead to infection into the joint or underlying bone, which may become carious and necrose.

Tuberculous bursitis occurs in two forms. There is either a fluid bursitis—characterized by the formation of melon-seed bodies, which can often be felt as a soft crepitus in the swelling—or the dry type, in which the lining membrane becomes transformed into a mass of tuberculous granulation tissue that may lead to the formation of a cold abscess. In those bursae which communicate with joints the infection will be common to both cavities. Secondary infection should be guarded against. Tuberculous disease most commonly attacks the subdeltoid, subgluteal, Achilles, and semimembranosus bursae. Treatment should follow the rules laid down for tuberculosis in general, with rest to the affected part in particular. Scott's strapping may be applied to the part, and any form of passive hyperaemia if it is practicable. Softening when it occurs is dealt with by aspiration, but if distension becomes excessive, incision, washing out the melon-seed bodies, bipping, and closing the cavity may be used: it is undesirable, however, that any extensive operative treatment should be performed. In burrowing bursae which become secondarily infected, such as the subgluteal, it may be necessary to open the area and scrape out the granulation tissue, pack with bipp, and allow it to heal from the bottom.

In *syphilis* a symmetrical bursitis with effusion may appear during the secondary stage, or, later, a gummatous infiltration of the bursa. The walls of the bursa become thick, presenting as a hard fibrous tumour with a small cavity in the centre. This variety occurs in the prepatellar or ischial bursa. In the secondary stage antisyphilitic remedies will clear up the condition, and may help in the gummatous condition, but the gummy material tends to break down with involvement of the skin, giving rise to sinuses. Under these conditions removal of the whole mass is necessary for cure.

Gouty deposits sometimes occur and often involve the olecranon bursa. They consist of chalky masses of biurate of soda, which can be seen under the skin. As a rule gouty bursitis calls for no local treatment, but the overlying skin tends to break down and the mass should be excised before infection takes place.

In *gonorrhoea* a sudden bursitis may occur as a septicaemic manifestation of that disease. It is uncommon, and treatment should be directed towards the cause of the condition.

OPHTHALMIC MALINGERING

BY

SYDNEY TIBBLES, L.R.C.P., L.R.C.S.Ed.

Formerly Honorary Eye Surgeon to the War Office, Central Recruiting Authorities, Ministry of Pensions, etc.

Claims for injuries to sight after motor accidents and injuries at work are frequent, and are generally referred to an eye surgeon for examination and report.

Having first heard the history and seen all relevant documents, make a note of any visible defects or injuries, judging their possible effects on the sight. A small nebula at the edge of the cornea can have little or no effect on the vision, whatever the claimant may say. Should he obviously be malingering, do not let him know he is suspected, as that only raises opposition on his side, while it is so easy to find out whether he can or cannot see. Examine the front parts of the eye through a loupe, using a good light and noting the pupillary reactions. Generally speaking, the older the patient the smaller the pupils; while short-sighted people have larger pupils than normal. It is the reverse with the long-sighted; the latter have more focusing to do. Excluding tabes, in which there is no direct reaction to light, if a light from a small torch is shone on a healthy eye the pupil contracts with that of the other eye. Should the eye be blind or partly so, there is no reaction in the former and very little in the latter case. Adhesions, too, may affect contraction of the pupil. Take the distant and near vision of each eye, then by means of retinoscopy the effect of any error of refraction can be settled.

Methods of Testing

Should the patient claim loss of sight in one eye, ask him to read small print, held a foot away, then hold a ruler a few inches from his eyes, between them and the print. If he reads without hesitation, he is doing so with both eyes. Next take a strong prism, say 16 degrees, holding it base up or down in front of his bad eye. Ask him to pick up a pin, a penny, or a pen and to write with the last. If he sees with both eyes, objects appear about three inches apart, and he has the utmost difficulty in doing these things, while his attempts to do so give him away at once. Care must be taken that both eyes are kept open.

In the Friend test letters alternately red and green are looked at through a red and a green lens. The red glass lets only red rays through and the green only green rays, so if he reads all the letters he sees with both eyes. If the refraction and other things appear normal but he only admits seeing the top letter at twenty feet, he should see the second row at half the distance, and other rows in proportion. Place a plus 3 lens in front of the good eye and a weak minus, say −0.25, which will make no appreciable difference to the sight, in front of the bad eye. If he reads the letters at the end of the room he is doing so with the bad eye, as the plus 3 will prevent a normal eye seeing more than the top letter. Any number of variations can be worked with lenses.

It is possible by retinoscopy to tell pretty well what a patient should see. Roughly one dioptre of short sight cuts vision down to a half, two dioptres to a quarter, and other amounts in proportion. By holding a plus 1, 2, or 3 in front of one's eye, if the refraction is normal, short sight to these degrees is produced, so that one can tell what these myopes see. Near at hand they see reading type up to their far point, which depends on the degree of short sight; minus 10 being able to read near type at four inches, minus 2 at twenty inches, and so on in proportion. If he is presbyopic one must calculate accordingly. Should we find minus 3 of short sight, a minus 3 lens should let this eye improve from a tenth to full vision. This is fairly easy with myopes, but as long-sighted people focus to overcome what they can of their defect, an amount which varies with their age and vitality, it is not quite so easy to tell what lens they require, as that needs the co-operation of the patient. At 20, if there is plus 3 of long sight, the eye may get normal distant vision, which as the accommodation fails may drop to a half at 40 and a tenth at 60 years of age, although an appropriate lens will give him normal sight again.

Some Personal Experiences

Examining hundreds of thousands of eyes at the Central Recruiting Office at Whitehall, I found that the bulk of the refractive errors were cases of long sight or long-sighted astigmatism, then came similar short-sighted conditions, and lastly cases of mixed astigmatism. In those days there were many malingerers, whereas nowadays the men are quite hurt if they are a little short-sighted and think they may be rejected. Many men had glasses that could be improved upon; others had certificates saying that they had all sorts of eye conditions. There were many cases of artificial conjunctivitis, tobacco ash, soap, and other irritants being used. When at Devonport I saw two men who had used somebody else's atropine ointment, which had a bad effect on their sight for a few days. Many aliens swore they had trachoma and produced certificates to that effect. Some had nothing more than a slight stippling of the conjunctiva, like blotting-paper seen through a strong lens. There were plenty of genuine cases in every stage which we rejected because of the contagiousness of trachoma.

On my return from the front a man consulted me, saying his doctor told him he had trachoma. On everting his lids it was evident they had been burned with probably lunar caustic stick. The authorities were informed at once, and he turned up a week later, at a board, escorted by the police as an absentee. He gave a different name and address, denied having seen me before, and as the lid condition was getting better he was marked as fit so far as the eyes were concerned, although he had a certificate from an eminent senior saying he had trachoma.

Night-blindness used to be a good excuse for missing duty. Lack of vitamins is a supposed factor, though it is a symptom of retinitis pigmentosa, which, with its gradually diminishing visual field, has fundus changes so characteristic that once seen they are never forgotten. Hysterical disturbances occur both in the forces and among civilians. The visual fields vary greatly; there is nothing abnormal to see in the eye, in this latter respect resembling toxic amblyopias, which are generally due to tobacco and alcohol. The latter, however, have a definite scotoma for red in the centre of the field, while the history of the case helps.

One young girl recently seen had a partly blind eye, because her father, having to return to South America, had put her in a convent, which she resented. As there was no doubt about the diagnosis, he was told she would get better if he went, and in a little over a week she saw properly again. Another girl quarrelled with her mother and would not see. She soon got better. In both cases only one eye was affected, and the visual fields varied greatly from day to day.

In 1915 somebody wrote to the Press in reply to a letter of mine, when in the Army, in which I deplored the fact that men were being "boarded" out of the Army when all they wanted was a pair of glasses. He suggested that ordering glasses for soldiers would produce a nation of troglodytes. Recently I saw four American sailors, two of whom were wearing glasses; this, of course, applies to men of every nation nowadays. Happier cases where the men could have escaped duty to their country come to mind. Just before the last war one saw me about his eyes, with glaucoma of both. They were operated on; he was at the front throughout the war, winning a D.S.O. and bar. Another highly short-sighted patient served throughout at the front without bad effect upon his eyes, and the same is true of many more seen at Pension Boards for other reasons.

LUNACY AND MENTAL DEFICIENCY

THE BOARD OF CONTROL'S REPORT

The annual report of the Board of Control[1]—the twenty-fifth—carries the story of mental hospitals and institutions for mental deficiency down only to the end of 1938. Since then many things have happened. The war emergency scheme provided for the total evacuation of four mental hospitals and the partial evacuation of one mental deficiency colony, while the remaining mental hospitals (with a few exceptions) and twenty selected mental deficiency institutions were to allocate for civilian casualties about one-quarter of their normal accommodation. The scheme which the Board of Control has had in hand, including the provision of certain additional beds at hutments to be erected in the grounds of a number of institutions, is designed to furnish 41,000 casualty beds for emergency use. The consequence has been the re-allocation and some, though not undue, crowding of the customary inmates. It is not inappropriate, perhaps, that war, the supreme lunacy, should have turned the mental hospitals inside out.

But the period covered by the present report was one of undisturbed progress. Overcrowding was somewhat reduced, the death rate in mental institutions fell, the increase in direct admissions was more than counterbalanced by the increase in absolute discharges and departures, and voluntary admissions as contrasted with admissions under certificate were on the upgrade. At the same time an aggregate deficiency in bed space of nearly 3,000 had to be acknowledged, and even at the beginning of the present year the war was casting its shadows before it and armament work was delaying new hospital construction. The building of proposed new hospitals for Essex and for Lancashire was not able to be started, a site provisionally selected for a mental hospital in Kent had to be abandoned, and although sites have been acquired for new hospitals in Surrey and in the West Riding, the buildings are not likely to be completed for a considerable time to come. There is therefore no prospect of any substantial increase in bed accommodation in the near future and overcrowding is likely to increase.

Out-patient Centres and Part-time Psychotherapists

An encouraging feature of the report is the steady increase in the number of out-patient centres. Such centres conducted by or in conjunction with staffs of mental hospitals now number 177, the number of patients presenting themselves for treatment last year exceeded 19,000, and the number of attendances 74,000. In addition, an unspecified number of out-patient centres are conducted independently of mental hospitals—at least twenty-five in connexion with other hospitals in the London area, and thirty-two in different parts of the country. Only three public mental hospitals in England have no such centres associated with them.

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[1] *Twenty-fifth Annual Report of the Board of Control for the Year 1938.* Part I. H.M. Stationery Office. (1s. 6d. net.)

Concerning part-time psychotherapists, about which a good deal has been said, the Board notes with satisfaction that a medical psychotherapist engaged on a sessional basis has been added by the London County Council to the staff of one of its hospitals to deal with those patients who appear likely to benefit by psychotherapeutic treatment. Some doubt is expressed over the terms of the recommendation by the Mental Hospitals Committee to the Council, in which it was stated that it was preferable for psychological reasons that this form of treatment should be given by a practitioner who was not open, as a member of the whole-time staff might be, to the suggestion that he was responsible in some way for the patient's continued detention. The Board points out that this in any case could not apply to the voluntary patients, and it cannot agree that it correctly represents the attitude of the average patient to the whole-time medical staff. There may be patients to whom visiting doctors are more acceptable, but the argument must not be pressed too far, because if it were carried to its logical conclusion it would limit the whole-time staff to the care of the patient's physical condition, which would be absurd.

Voluntary Patients

The increasing proportion of voluntary patients is generally satisfactory, but there is still far too wide a margin between the more and the less progressive hospitals in this respect. The tendency to restrict voluntary admissions is not entirely to be explained by the fact of overcrowding, in which conditions those under certificate would have preference. In a previous report the Board estimated that when the Mental Treatment Act was in full operation admissions under certificate would not exceed one-third of the total. This forecast has already been realized in a few areas. The percentage of voluntary admissions last year at Swansea was 73, at Cardiff 72, at Croydon 71, and at Portsmouth 70. But at the other end of the scale there are seven hospitals where the proportion of voluntary admissions is under 15 per cent., and twenty-seven others where it is between 15 and 25 per cent.

Some medical men take the view that if a patient has to enter a mental hospital the fact of entry cannot be concealed and it is relatively unimportant to what legal category he belongs. It is true that the legal classification bears no relation to the medical. A voluntary patient is not necessarily a mild case, nor is a certified case necessarily more serious or likely to require a longer period of treatment. But it must not be assumed, says the Board, that the legal classification is unimportant. If the patient recovers it makes an enormous difference to his peace of mind that he can console himself with the thought that he has never been certified, and even if there is no recovery the avoidance of certification saves the relatives from distress. At the same time the subterfuges sometimes adopted with the kindest intention to treat on a voluntary basis patients who have no volition are deprecated.

Statistics of Mental Hospitals

The main body of the report as usual consists of statistics, most of which are routine, but some throw an interesting light on the subject. Of the 158,723 persons suffering from mental disorder and notified as under care in England and Wales at the beginning of the present year, 142,897 were rate-aided, 14,972 were private, and 854 were criminal (the number of patients in the Criminal Lunatic Asylum, Broadmoor, was 779—599 men and 180 women—but there were also 77 criminal patients in local authorities' institutions). Of the total number of mentally disordered patients, 133,827 were in institutions provided by local authorities, only 275 were in private single care, and 3,560 were on outdoor relief, the remainder being in registered hospitals, licensed houses, approved nursing homes, and public assistance institutions. Voluntary patients numbered 10,297, and temporary patients 630.

The death rate in mental hospitals was 6.57 per cent. of the average daily number resident, as compared with an average of 6.94 for the preceding quinquennium. Pneumonia and diseases of the myocardium were the principal causes of death. Violent deaths, including suicide, accounted for just under 1 per cent. The cases of infectious disease among patients numbered only 128, with five deaths. The tuberculosis prevalence was equivalent to 8.3 cases per thousand patients. Typhoid and paratyphoid fever accounted for 38 cases in twenty-two hospitals. The number of cases of dysentery (565) was higher than at any time during the last ten years. It is clearly established that the recent rise in incidence is due to a large increase in infection by the Sonne organism. It is known that during the last few years Sonne dysentery has become increasingly prevalent in the general community.

Treatment by Insulin and Cardiazol

A summary is given of the results obtained from a questionary circulated to the various hospitals on the results of treatment by insulin and cardiazol. The returns relate to 3,531 completed cases, almost equally divided between males and females. The treatment has been employed at ninety-two institutions as follows: insulin only, 3; cardiazol only, 61; insulin and cardiazol combined, 16; insulin and cardiazol not given together but at different times, 12. The results in those cases in which three or more months had elapsed since treatment ended can be best furnished in a table extracted from the fuller tables published in the report. By the term "complete remission" is meant that the patient was apparently well; by "incomplete remission," that he was fit for work but with one symptom left; and by "partial remission," that he was still fit for work but with several symptoms left.

	Cases which have left Hospital			Cases which have not left Hospital		
	Complete Remission	Incomplete Remission	Partial Remission	Ameliorated	Unchanged	Worse
Insulin ..	138	36	34	50	114	9
Cardiazol ..	542	134	152	594	1,220	110
Both ..	27	16	12	30	88	3

In 363 other cases treated details were not furnished or the cases did not fall under precise headings. Nineteen deaths occurred—namely, six patients who were under insulin treatment, ten under cardiazol, and three under both, a proportion of deaths to completed cases of 0.5 per cent. It is obvious that the matter does not lend itself to exact statistical statement, but there was some remission in about 31 per cent. of cases leaving hospital subsequently to treatment, and amelioration in just over 19 per cent. of those who were treated but did not improve enough to leave hospital. The clinical opinion with regard to triazol, which had only been tried in fewer than a hundred cases, was that it gave results broadly analogous to those obtained with cardiazol.

Mental Deficiency

Good progress was made last year in institutional accommodation for mental deficiency, and practically all the larger authorities in England now have a number of beds which at least meets their most pressing needs; similar progress in Wales cannot be reported. Occupation centres continue to increase in number, though not so rapidly as had been hoped. The warning is repeated that such centres should be regarded primarily as intended for tractable and ineducable lower-grade defectives living in good surroundings. Circumstances may sometimes compel the admission of higher-grade feeble-minded patients, but the result in mixture of grades adds greatly to the difficulties of organization and teaching. The question of training supervisors for occupation centres has not received the attention it deserves. The salaries offered by certain authorities, says the Board, "would hardly attract a charwoman." The occupation centre has proved its value and emerged from an experimental stage, and the Board feels that the time has come to establish some recognized training scheme for those who will be in charge of such centres.

The number of mentally defective persons in institutions and under statutory care in the community at the beginning of the present year was 89,904. Whereas there are fewer males than females subject to mental disorder (44.2 as compared with 55.8 per cent.), in mental deficiency the sex ratio is reversed, males accounting for 51.2 per cent. of the cases and females for 48.8 per cent. About 46,000 defectives were in institutions and homes provided under the Mental Deficiency Act and 39,000 were under statutory supervision. In only a few areas does the number of defectives who are in institutions or in ante-natal care closely approximate to the number ascertained as subject to be dealt with. In some areas large numbers of the ascertained persons still remain in receipt of poor relief, and in others, although there has been a large ascertainment, action has not been taken in many cases. In one Welsh county, for example, the proportion ascertained is 1.46 per thousand of the population, and the proportion dealt with only 0.23. On the other hand, in the county of London the proportion ascertained as subject to be dealt with is 2.83 per thousand, and the number in institutions or in other care is 2.80.

At twenty certified institutions provided by local authorities or combinations of authorities and at five certified institutions provided by other bodies resident medical superintendents had been appointed. There is a decrease in the number of persons on licence from institutions (3,107), due to the anti-social behaviour of certain defectives on licence, to which prominence was given in legal proceedings. The scrutiny which local authorities have consequently made has led to the recall to institutions of a number of defectives and to a revision of policy and methods which it is hoped will eventually help rather than hinder the development of licence on safe and progressive lines.

TRANSPORT OF MILITARY SICK AND WOUNDED

BRITISH AMBULANCE TRAINS AND BOATS

The Channel port which serves as the headquarters in England for the reception and distribution of military sick and wounded from the Expeditionary Force was visited a few days ago by representatives of the Press, who were afforded an opportunity of inspecting an ambulance train and boat. The railway companies have set aside a number of their trains for this purpose, and their staffs, working to Army specifications, have fitted them up as travelling hospitals. The equipment and supplies have been provided by the Army Medical Service.

The trains are painted dark green, with the Red Cross prominently displayed on the sides of each coach and on the white roofs. Each train consists of nine coaches, five of which have been transformed into wards. The first coach is reserved for the two medical officers and the two nursing sisters who are attached to each train. Four compartments have been made into bedrooms and two into messrooms. The second coach is for the twenty N.C.O.s and men who serve as nursing orderlies, stretcher-bearers, and kitchen staff. Bunks have been arranged in two tiers along one side of the coach, and on the other side tables for meals. The men are also allowed to use, for recreative purposes, the compartments reserved for officer sitting cases when these are not otherwise in use.

The third coach accommodates kitchen and stores. The kitchen is equipped with cooking range, a large sink with drying racks, and plentiful cupboards. In the fourth coach is an orderly room and a well-fitted dispensary with all the drugs and appliances likely to be needed in transit. The nursing sisters also have in their charge a store of medical comforts. In this same coach is the provision for officers who are sitting cases; they are given comfortable cushioned seats, and the tables have books, magazines, and ashtrays.

Four of the ward coaches are for men and one for officers. The officers' coach may be partitioned and a space reserved for sick nursing sisters if necessary. The beds in all the coaches have wire mattresses, and the metal sides are coated with aluminium paint. The thirty-six beds to each coach are arranged in tiers of three, and comfortably supplied with sheets, blankets, and pillows. They can be quickly converted to accommodate sitting cases, the middle tier being lowered on to the bottom tier so as to make quite a luxurious seat, while the upper tier still takes recumbent patients. At the end of each ward are cupboards, sinks, and lavatory accommodation, and in the middle of each coach is a drinking-water tank.

Stretchers are not carried into the wards. The patient is brought on the stretcher to the middle doors, and is then lifted out and carried to the bed by trained orderlies. Some of the orderlies belong to the St. John Ambulance Association and hold first-aid and home nursing certificates, and others are hospital orderlies who are carrying on their training during the waiting period. Two small padded compartments on each train are fitted for acute mental cases, but it is hoped there will be few or none of these. The trains are lit by electricity. Loading and unloading in the dark is carried out by the light of oil lamps. When the train is standing the staff compartments are heated by a coke boiler; when travelling, of course, the heat to the whole train is supplied from the engine.

Hospital Carrier Boats

In the harbour a hospital carrier was open for inspection. The hospital carriers are boats which have been used in peace time for the Channel and Irish Sea crossings. Each boat can take from 250 to 300 cases, or enough to fill two trains. The boats are white painted, with the Red Cross on the sides and funnel. Here again, as on the train, the ordinary furnishings and fixtures have been removed so that only a shell remains, and the state and other rooms have been converted into wards, giving the impression of a large open space with swinging cots. Each ward is self-contained under the charge of a hospital sister, who has R.A.M.C. orderlies to help her. Adequate provision of dressings and oxygen equipment is made in each ward. The first-class dining room has been turned into a ward for officers, but here, as also on the train, there is no distinction between the comfort afforded to officers and to men. The more serious cases are accommodated on the saloon deck, while the lower part of the boat has wards fitted for walking cases, so that the necessity for carrying stretchers up and down narrow stairways is avoided. The bar in the third-class saloon has been made into a dressing room where walking cases may have their wounds dressed and minor operations may be performed. Near each bed is a lifebelt, and all the sisters and orderlies are trained in A.R.P. and in the necessary duty in the event of fire, collision, sinking, or other disaster which may befall a ship. The hospital staff live on the boat, which has a galley for the service of meals, and on the boat, as on the train, patients are given a meal immediately on arrival on board.

At the Port

When the authorities at the port are notified that a boat is on its way across, the trains that are assigned for duty are got ready and the staff stand by. The patients on disembarking are taken into sheds, where the stretchers are placed on trestles and medical officers make a first examination, roughly dividing medical from surgical cases in order to facilitate work at the hospitals to which the cases will be distributed. Each man has an envelope containing a card with details of name, regiment, rank, nature of disability, and place of departure, and the record is completed with the destination. Patients who are very ill are not put on the train at all, but are sent to a local hospital where beds are reserved. During the port examination a benevolent lady, Miss Baxter, and her helpers have special permission and facilities for going among the men to distribute cups of tea, biscuits, and cigarettes.

Part of the warehouse accommodation at the port is in the hands of the Army authorities. This includes one large shed ordinarily occupied with merchandise and now stocked with linen of every description, drugs, and all kinds of supplies from which the boats and trains are provisioned. The average time taken from arrival of the boat to entrainment is an hour and a half. Three officers of the Army Medical Service, together with one Navy and one Air Force medical officer, receive the casualties at the port, apart from the two medical officers attached to each train. The majority of the officers engaged in this work have come from civil practice; some had retired from the Army Medical Service and have rejoined.

Up to the present the transport has been limited to sickness and accident cases; there have been no war wounded. We were informed that there had been no cases of pneumonia or of serious respiratory complaints. Most of the sickness cases are digestive disorders, and the accident cases are no more than would ordinarily occur in any large assemblage of men. The work done by all concerned in this enterprise—the railway and shipping authorities and the medical services—cannot be too highly praised. Every detail has had consideration, and every emergency seems to have been forestalled.

THE MAUDSLEY HOSPITAL AND ITS SUPERINTENDENT

[FROM A CORRESPONDENT]

The retirement on grounds of health of Professor Edward Mapother from the post of superintendent of the Maudsley Hospital recalls the offer made in 1907 by the late Dr. Henry Maudsley to give the whole of his hard-earned fortune in order to found a hospital that would meet certain special needs which his long and wide experience had taught him existed in the field of psychological medicine. The subject was, as it still is, complex, and hence how best to formulate a scheme to meet these needs was not easy. What exactly, when reduced to terms, were these special needs; what precisely were the facilities needed for treatment and research; where and under whose aegis should they be provided? Great clinical exponent though the would-be donor was, his thoughts upon the matter were confessedly inchoate; and in his retirement from active practice he welcomed talks with his friends upon the matter. In particular, he was glad to turn to Professor (later Sir Frederick) Mott, whose name, without in the least belittling the greatness of the donor's gesture, always will be linked with that of Maudsley.

Conditions of Maudsley's Gift

In the statement communicated to the London County Council on behalf of Dr. Maudsley by Sir Frederick Mott, among the suggested conditions of the gift were the following: that the hospital should be for early and acute cases only, that it should have an out-patient department, that it should be in a central position, that three-quarters of the beds should be for patients unable to pay full cost of maintenance, and that due provision should be made for clinical and pathological research. Expression, too, was given to the hope that the hospital, laboratory, and teaching side of the institute should be recognized as a School of the University of London for the study of mental disorders and neuropathology.

There followed the acceptance of the gift by the London County Council, and if the trust which it imposed was more moral than legal, the greater and more honourable is the degree to which it has been fulfilled and the more onerous has been the task which fell on those charged with evolving the development of the scheme, especially the superintendent.

"The Maudsley," 1914-23

Immediately upon the completion of the building came the war of 1914-18 and the temporary use of the hospital first as part of the 4th London Territorial General Hospital and then by the Ministry of Pensions. To the donor this interim use was a period of deep disappointment, accentuated doubtless by his advanced age. He found it hard to believe the assurances of his friends that the work which the hospital (to which his name already had been given) was performing on behalf of shell-shocked soldiers and later for pensioners was, besides its intrinsic worth and the lessons it was teaching, of signal value in helping to pave the way for changes in the law so as to enable persons suffering from nervous and mental illness to secure treatment in the earliest stages.

At last came in 1923 the use of the hospital—aided by the Central Laboratory which, moved from Claybury, had been erected jointly with it—by its owners, the London County Council, and on lines in the main as outlined by its donor. Some four years before his death he had agreed to certain changes in the conditions of his gift: changes the need for which had been felt all the more clearly in the course of the hospital's use by soldier patients; notably the need to legalize the reception of patients on a voluntary footing, for which purpose legislation had been secured by the Council in its General Powers Act of 1915.

Captain Mapother, as he then was, had been serving in France and Mesopotamia; and, besides having been officer-in-charge of the neurological section in the 2nd Western General Hospital, had been acting as superintendent during its occupancy of the Maudsley by the Ministry of Pensions, and was an active member of the team of postgraduate lecturers for the course established there in 1920 for the Diploma in Psychological Medicine. In the mental hospitals service he had reached the position of deputy superintendent at Long-Grove, the medical staff of which he had joined fourteen years previously during the period of that hospital's opening and development. With this wide background of experience his appointment by the London County Council as superintendent of the Maudsley Hospital seemed a certainty. It was shortly afterwards, consequent upon Sir Frederick Mott's retirement, that Dr. (now Professor) Golla was appointed director of laboratory and pathologist to the London County Mental Hospitals.

The Past Sixteen Years

Since that date and for the past sixteen years Dr. Mapother has provided in himself an example of enthusiastic devotion to a chargeship and to an ideal, coupled with a prodigious output of energy. This ideal has been the elimination from the patient's feelings of any notion of constraint or coercion about the treatment or that it is being applied compulsorily, and especially of any feeling of active detention. There are, and always will be, cases in which certification and detention are unavoidable; and those whose experience is greatest know, too, that there even are cases in which such procedure is of itself so beneficial as to rank it as part of treatment. Apart from the latter cases—and they are but few—the reality of the ideal is unquestionable; and, in dealing with mental disorder, it is now a truism that when treatment is carried out either with free consent or upon the patient's own voluntary application, and in an atmosphere of co-operation, in a large proportion of cases the chances of recovery are altogether better, and the chances also of getting patients in an early stage of their illness are likewise much greater. It is on these lines that "The Maudsley," the name by which the hospital is familiarly known, has been developed. It is in fact the only hospital in the country provided by a local authority under the Mental Treatment Act for voluntary patients alone.

Teaching has gone hand in hand with all Professor Mapother's clinical and administrative work, both at the Maudsley and as physician and lecturer in psychological medicine at King's College Hospital as well as the Maida Vale Hospital for Paralysis. His own position and that which the Maudsley Hospital occupies in the field of medicine have been recognized by the University of London in its appointment of him as the first occupant of the chair of psychiatry. Now, owing to the outbreak of war, he has to witness the dispersal of the fruits of his efforts at the moment of their culmination. Some of the essentials of the work will still be in operation, however, and the component parts of the institute can be reassembled with ease upon foundations well and truly laid.

REPORT ON THE CONDITION OF POLISH REFUGEES IN RUMANIA AND HUNGARY

BY

RICHARD W. B. ELLIS, M.D., F.R.C.P.

Assistant Physician for Children's Diseases, Guy's Hospital; Physician, the Infants Hospital, Vincent Square, London

DERMOD O'DONOVAN

AND

FRANCESCA M. WILSON

The following report is based on an investigation of refugee conditions carried out under the auspices of the Society of Friends and the Polish Relief Fund between October 17 and November 3. During this time some twenty-three military camps and civilian centres were inspected in Rumania and Hungary. The fullest co-operation was given by the civil and military authorities in both countries in the inspection of records and accommodation, and in permission to talk freely with Polish soldiers and civilians.

Exact figures regarding the total numbers and classification of refugees are not yet available owing to registration being incomplete, the uncontrolled movement of civilians, and the entrance of stragglers over the Russian frontier, which still continues. There appear, however, to be 30,000 to 35,000 in Rumania, of which 10,000 are civilians; 48,000 to 50,000 in Hungary, of which again some 10,000 are civilians. Women and young children form less than a fifth of the civilians, and there are very few young children without at least one parent. There are, however, some six hundred or more Polish boy scouts and other boys of from 12 to 18 who came over with the army; many of these have in Hungary been interned with the soldiers. There are also several hundred students in both countries. About half the male civilians are "functionaries"—postmen, police, civil servants, etc.—who were evacuated by the Polish Government. Only a small number of peasants appear to have crossed the frontier.

In both Rumania and Hungary we were continually impressed by the obvious desire of the authorities to do their best for the refugees, but it was equally clear that circumstances made the immediate provision of adequate accommodation and equipment completely impossible. Thus Rumania, with nearly a million men mobilized and a new class to be called this month, was short of bedding, clothing, and barracks even for her own army, while Hungary was still in the process of absorbing some thousands of her own refugees from Transylvania, and was finding the sudden influx of 50,000 Poles an almost intolerable strain on public funds. Food was in both countries available in adequate amount, but there was no question that all amenities, and in fact many necessities such as clothing and bedding, would have to be provided by outside agencies.

Refugees in Rumania

Almost all the refugees at present in Rumania, together with many other civilians with private means who have since left the country, crossed the northern frontier within forty-eight hours in the third week in September. Although the authorities were expecting a large influx, and had sent twenty-five army trains fitted with bathing and disinfecting facilities to the frontier, the numbers were so overwhelming that all attempts at orderly delousing, registration, and distribution completely broke down. The civilians found their way, largely haphazard, to Bucarest or villages throughout the country, where they were taken in by the peasants, who showed them the utmost generosity. The soldiers were disarmed and interned, according to international law, large numbers being sent to Tulcea and Babadag in the Dobrudja. This had the advantage of concentrating them in a militarily "empty" zone well away from the northern frontier, but as the Dobrudja is a marshy and highly malarious region it has resulted in a considerable amount of infection.

The Government is now allowing 100 lei a day for each civilian adult (50 lei for a child), which with the low cost of living is adequate to provide for food and lodging. In order to draw it, however, the civilians must register and remain in one of thirty-six provincial centres outside Bucarest and away from the northern frontier. Those we visited appeared to be reasonably well provided with board and lodging, but hardly any had more than the summer clothes they came away in. There is a hope that 3,000 or 4,000 of the technicians may be found work in Turkey or elsewhere, but there is little prospect of employment for the clerks and civil servants. The future of 1,200 Jewish civilians is particularly precarious, owing to recent anti-semitic legislation. Only 200 can at present obtain permits for Palestine.

The soldiers are interned with their officers in twenty-one camps in Wallachia, accommodated in old army barracks in much the same conditions, except as regards liberty and occupation, as the Rumanian soldiers. Most of the larger camps we visited were fitted with sufficient showers to give the men one bath a week, though the water supply was not always adequate and it was not clear how fully the men availed themselves of the facilities. At Targu Jiu, Polish soldiers were at work on the construction of new barracks to house 12,000 of them, the intention being to concentrate the remainder in a second new camp at Targovisti. The existing barracks were for the most part cold, ill-lighted, and overcrowded, with inadequate sanitation and a sea of mud stretching between the buildings.

Clothing and Bedding.—In every camp there was a desperate shortage of clothing, shoes, blankets, and palliasses. Relatively few of the men had overcoats, and hardly any a change of underclothes. Many had only linen summer uniforms, although the weather was already becoming bitterly cold and wet. Time after time men stripped off their uniforms to show us the filthy, ragged, and verminous shirts they had worn night and day for six weeks. Shoes were wearing out, and in only one camp we saw tools and leather for repairing them. In some cases the men had separate beds, but in many they were sleeping on loose straw. Almost universally they complained of lice, for even with regular bathing it was impossible to keep free without changing and disinfecting clothing.

Health.—The civilians and the majority of the soldiers looked well fed and in good physical condition. An increasing number of respiratory infections, however, are occurring with the onset of the cold weather, and though medical attention is available there are practically no facilities for nursing, special care, or isolation within the camps themselves. (A Polish medical orderly told us there was no thermometer between two battalions.) The more serious cases (there have been few of these) are removed to hospital.

Malaria.—This is so common in many parts of Rumania, and so many of the Rumanians have had the aestivo-autumnal type, that it is not there regarded as a serious disease. The Poles, being infected in nearly all cases for the first time, however, were suffering considerably, particularly as adequate amounts of quinine were not always available in individual camps, although there is yet no shortage of quinine preparations in the country as a whole. In one camp of a thousand men the Rumanian doctor told me he was seeing four new cases of malaria a day, confirmed by blood examination, although fortunately the season was nearly at an end.

Typhus.—This is undoubtedly the chief epidemic danger in Rumania this winter. The classical exanthematic type is endemic in Bessarabia and parts of Poland, and was responsible for an enormous mortality in Rumania during the last war. In view of the extent of the Rumanian mobilization it was regarded as a serious possibility even before the Polish soldiers were added to the number. Immunization has not been found effective against this type in Bessarabia, and its prevention appears therefore largely to resolve itself into the prompt provision of clothing and bedding, with the consequent possibility of effective delousing. So far no case has occurred.

Typhoid and Dysentery.—Extensive typhoid inoculations are being carried out both in the Rumanian army and among the Polish refugees. There are at present sufficient quantities of vaccine in the country. No case of true dysentery has occurred so far, one outbreak of gastro-enteritis in camp in the Dobrudja having been traced to the soldiers having eaten large quantities of unwashed grapes which had been sprayed with copper sulphate.

Refugees in Hungary

As in the case of the refugees entering Rumania, the main influx into Hungary happened during the third week of September, though extending over about four days. There was, however, considerable difference in the way they were distributed. Thus in order that the Polish army should not appear to be kept as military units the great majority of the officers were separated from the men and billeted together, being allowed much greater freedom. The men were also paid two filler a day, though this had to provide for certain necessities such as soap. (In Rumania the soldiers, as opposed to the officers, had no money whatever.) The soldiers were for the most part interned in barracks, but some were in derelict factories and other disused buildings. Many of the civilians were billeted privately, but many more were in separate camps, and there were even a number of women and children in some of the military camps. Among the more unfortunate were several hundred scouts and boys of scout age who were living as, and with, soldiers under particularly brutalizing conditions. The urgency of removing civilians from the military camps was, however, fully realized by the Government, and they were being withdrawn as fast as alternative accommodation could be found. It was planned to have one large camp for the women with young children, and a separate scout camp had already been started with the aid of the Hungarian scouts which would accommodate 250 boys at Somloszöllös.

In the case of both the civilians and the military, we were particularly struck with the great difference that existed between the best and the worst refugee conditions. Thus a civilian camp at Helemba was housed in what had been a newly built Czech barrack subsequently converted into a holiday home, and was admirable as regards cleanliness and equipment, although the invariable shortage of personal clothing existed. We later saw a military camp housed in a derelict vinegar factory in which 500 men were in almost complete darkness in a warehouse below ground level, sleeping on a concrete floor covered with loose straw. In another part of the same building were a number of women and children, six families inhabiting a room twenty-four feet square.

Health.—The health of the refugees in Hungary appeared better than of those in Rumania, largely owing to the absence of malaria. Similar cases of respiratory infection were occurring. In the military hospital at Kamaron, which served camps containing over 5,000 Poles, we found only a comparatively small number of sick, all minor ailments with the exception of three cases of pneumonia and six men recovering from air raid injuries. The danger of typhus, though it cannot be altogether excluded, appears much less than in Rumania, the only cases in Hungary of recent years having been traceable to nomad gipsies coming over the Rumanian border. The same difficulties with regard to vermin infestation owing to lack of clothing apply as in Rumania, though probably more of the civilians became verminous in Rumania while staying in peasant cottages.

The Morale of the Refugees

If the lot of the civilian refugee is wretched, that of an interned army with no country to return to is still more hopeless. Almost more than the material discomfort of the cold and lice, the men felt the forlorn misery of being cut off from the outside world, among strangers, however friendly these might be. A few letters were coming through from the German occupied territory, either direct or through the International Red Cross, but none from the Russian side, and there was hardly a man without constant anxiety for family or friends. Many indeed did not even know whether their wives and children were in Germany or Russia or Rumania or Hungary, and some families were even divided between the four countries.

Although sharing many of the same anxieties as the soldiers, the civilians were on the whole less dispirited, largely on account of their greater freedom and the knowledge that they could go elsewhere if opportunity arose. There were more signs of enterprise among them, some trying to find employment locally or abroad, others to make their circumstances more homelike. Thus in Ploesti, where a thousand civilians were concentrated, the president of the civilian Polish committee had drawn up plans for starting both an elementary and a commercial school, had selected the staff and curriculum, and worked out the minimum cost for essential equipment. We felt that there would be an immediate response if workshops, etc., could be established in civilian centres.

Among the military refugees there appeared to be a strikingly different spirit in different camps, which was by no means wholly dependent on material circumstances. That in which the men were clearly most contented was one which was fortunate in having both a Rumanian and a Polish colonel of exceptional qualities, but, though there was obviously thoughtfulness for the men and a general atmosphere of cleanliness and order, the basic provisions of the camp were little different from that in which the spirit was worst. Generally speaking, the men appeared dazed and apathetic, with a general sense of grievance for the march of events and their own miserable circumstances, which was apt to be visited irrationally on either their own or their foreign officers, and tended to make them uncooperative even in improving their own conditions. They were in no mood to appreciate the real sacrifices which the Rumanians and Hungarians were making to support them, and it was sad to see signs here and there that the initial friendliness with which their care had been undertaken was beginning to give way to exasperation.

In spite of such signs, however, we were repeatedly impressed by the sympathy and understanding of the Rumanian and Hungarian commandants of the various camps. The colonel in charge of five camps at Kamaron said that he felt that many of the more troublesome men were in a state of war neurosis, and that the sudden disaster within a few weeks of their being mobilized had left them with none of the *esprit de corps* and discipline developed during a long campaign. He added that, next to blankets and underclothes, footballs, equipment for workshops, and school books were the first essentials.

Relief Organizations

A number of relief organizations are already at work in both countries, and in Hungary, where much is deputed to them by the Government, a co-ordinating committee has been set up consisting of representatives of the Hungarian Red Cross, the Polish Government, the Hungarian-Polish Society (a very active organization which has been largely responsible for the billeting of civilians), and the American Commission for Polish Relief. The last operates also in Rumania, in close association with the Y.M.C.A. and Y.W.C.A., and is planning the large-scale establishment of "foyers" in the camps of both countries, to act as local centres for relief activities. The Save the Children Fund also has active representatives in Bucarest and Budapest. Other organizations such as the OSE are concentrating on special aspects of the refugee problem (for example, the fate of Jewish refugees), and much is being done by private individuals in both countries. The activities of the organizations not receiving funds from abroad are necessarily restricted.

Conclusions

1. An urgent need exists in both countries for warm clothing of all kinds, and particularly for underclothing, overcoats, blankets, shoes, and material for mattress covers. It is unlikely that any large quantity of these will be obtainable in Rumania owing to the requirements of the Rumanian army. (Sheep-skin coats, which can be obtained very cheaply in Rumania, are unfortunately too difficult to disinfect for their use to be justified.) In Hungary at least some of these requirements can be obtained within the country at rates that would make their shipment from abroad inadvisable (for example, shoes and some proportion of the blankets, overcoats, and underclothing).

2. It is most desirable that in both countries the existing facilities for regular bathing and for the disinfection of clothing of refugees should be extended as rapidly as possible. Where straw is not always immediately available, sufficient stocks should be kept to provide for the frequent changing and burning of infected straw from sleeping quarters.

3. There appears to be no immediate shortage of either drugs or vaccines, but a shortage is likely to occur if the refugee position remains unchanged. Quinine preparations in Rumania and disinfectants and soap in both countries are those of which there is most likely to be a dearth.

4. The desirability of equipping workshops and schools and concentrating older boys and students where they can continue their education is almost as great as providing physical necessities. A few textbooks in Polish (for example, for learning Rumanian and Hungarian) could be printed locally if money were available, and would be of the greatest value.

5. In view of there being many highly trained Poles and Polish-speaking Rumanians or Hungarians in both countries, it does not seem advisable to send out any extensive personnel from this country at the present time.

We wish to express our sincerest thanks for their help to the civil and military authorities and to the Red Cross in Rumania and Hungary; to the British Legation and Polish Embassy in Bucarest, and the British and Polish Legations in Budapest; to Professor Cambiescu, Professor Ciuca, and Dr. B. Johan; to Princess Caragea and Mlle Vajkai of the Save the Children Fund; to Mr. Paul Super and Mr. James Brown of the American Commission for Polish Relief; to Countess Romer of the Polish Society in Rumania; and to Princess Odescalchi-Andracsy and Countess Erzsèbet Szápáry of the Hungarian-Polish Society.

Local News

INDIA

The Campaign against Leprosy

The sixty-third annual report of the Mission to Lepers appears with the title "The Inherent Promise" and relates to the work accomplished all over the world, and especially in India, which country has always been one of the most cultivated fields of this interdenominational and international organization. It is announced that a record number of lepers is now being helped, and special progress is noted in the report in respect of the intensive treatment of the disease in young children, where the benefit is more obvious. This extension of the programme of the organization has been especially pushed in India, where also progress has been made in the care and treatment of infected children on a larger scale and to the colonization of young people from the leper homes in which infection has been prevented; provision has been made in the Central Provinces for such children and for arrested cases in which there is now a reasonable hope of no recrudescence of the disease. The provision of the new home for lepers in Fyzabad in the United Provinces was rendered possible largely by subscriptions raised locally for that specific purpose, and a co-ordinated scheme of treatment, including colonization possibilities, is now coming into being. The Chandkuri Leper Home in the Central Provinces, which celebrated its fortieth anniversary last year, has treated some five thousand lepers, and seven hundred healthy children of leper parentage have taken their place in the healthy community. The report expresses the view that hydnocarpus oil and its esters administered intramuscularly, subcutaneously, and intradermally remain the most valuable therapeutic agents. For improving and maintaining the general health of these patients the diet must be liberal, well balanced, and rich in vitamins. Occupational therapy is highly esteemed, and it is important to eliminate intercurrent diseases. This emphasis on nutrition, which, it is remarked, has sometimes been ignored with unfortunate results, dates from the beginning of the campaign against leprosy; without an adequate diet drug therapy nearly always fails to be of much value. The report contains a reference to a case of one leper home in which the patients denied themselves meat and sugar for one month in the absence of the missionary so that the considerable amount of money thus raised might go to the famine-stricken Bhils in the Indore district. Similar forms of practical gratitude shown by leper patients are not uncommon elsewhere in India, and the popularity of the campaign is growing steadily.

Obstetrics in India

The second All-India Obstetric and Gynaecological Congress, held in Bombay last year, was attended by delegates and visitors from more than fifty different localities. The proceedings have now been published. In his address of welcome Sir Mangaldas Mehta traced the origin and growth of maternity work in Bombay. The first maternity home, containing twenty beds, was opened in 1849. To-day there are eighty-three public and charitable institutions and nursing homes with a total of 1,308 beds. Of 37,795 births registered in the city during 1937, 27,758, or 73.4 per cent., took place in maternity institutions. For the same year the maternal death rate was 4.4 per 1,000, while the infant death rate had diminished by nearly a quarter from the rate of 1920, when only 20 per cent. of women were confined in maternity institutions. In his presidential address Dr. B. D. Mukherji of Calcutta, reviewing general conditions throughout the country, deplored the ignorance and superstition of the average Indian mother and the abject poverty of the masses. In most of the Indian villages the only medical help available for the mother is that of the untrained midwife or "dhai." Dr. Mukherji also maintained that even in urban areas the position was far from satisfactory, owing to the dearth of obstetric specialists in the smaller towns. Unless employed in Government service these men were obliged to congregate in large cities, such as Calcutta, Madras, or Bombay, in order to obtain adequate opportunity for remunerative work. Dr. Mukherji advocated the establishment of rural maternity centres, affiliated to special hospitals in the district and subdivisional towns; also the provision of mobile dispensaries for obstetric and gynaecological work in rural areas. The congress devoted its attention chiefly to the questions of the toxaemias of pregnancy and carcinoma of the cervix. Among other papers read that of Dr. D. M. Satur on post-puerperal neuritis appears to be of considerable interest. Dr. Satur's patients, drawn from an impoverished community in the Andhra district, near Vizagapatam, lived on a diet consisting chiefly of polished rice. The lack of essential food factors was further accentuated by a restriction of the diet during the latter half of pregnancy and a period of three months after delivery. The neuritis, bearing some resemblance to beriberi, though showing definite points of dissimilarity, was of a severe type in many of the cases. A prolonged course of treatment invariably resulted in complete recovery. Dr. Satur supplied the missing vitamin B_1 factor by a diet of bread-and-milk, spinach, tomatoes, and oranges, together with a handful of germinating green gram and half an ounce of yeast daily. Severe cases also received a course of ten injections of betaxin.

ENGLAND AND WALES

Tuberculosis in Lancashire

The principles of the Lancashire County Council's tuberculosis scheme bear repetition because, in spite of their admitted excellence, they have not been adopted by other authorities as widely as they deserve. The scheme caters for a population of nearly two millions, and its essential features are: (1) combination of dispensary with hospital and sanatorium work; and (2) supervision by a central tuberculosis officer who is directly responsible to a special county tuberculosis committee. The administrative county is divided into five large areas (average population 328,000) and three small areas. A consultant tuberculosis officer is in charge of each large area, and to help him there are two assistant tuberculosis officers, four to seven tuberculosis health visitors, and a clerical staff of two. In each area there is a chief dispensary, at which is co-ordinated all the work required in that particular area, and two or more branch dispensaries, and also a sanatorium hospital containing up to fifty-seven beds, to which the consultant tuberculosis officer acts as visiting medical superintendent. The three small dispensary areas, on the other hand, are each under the charge of the medical superintendent of the three larger Lancashire tuberculosis institutions. Each has one dispensary with one or more health visitors, the clerical work being done in the office of the institution. The report for 1938 of Dr. Lissant Cox, Lancashire County Council's central tuberculosis officer, maintains the usual high standard of these reports. The death rate from tuberculosis, which had remained at the same level since 1935, fell appreciably during 1938 to 0.52 per 1,000 of population. A comparative table of new cases of pulmonary tuberculosis notified in 1938 and pulmonary notifications in 1920 shows that whereas in males the percentage reduction in the age period 15 to 25 is 42.5, in females it is only 19.4. Dr. Cox's remarks concerning non-notified cases of the disease should be brought to the notice of all those responsible for tuberculosis administration. He states: "The efficiency of notification in England varies directly with the efficiency of the county council or county borough scheme dealing with tuberculosis. If there is no really comprehensive scheme, if there are poor and newly qualified, part-time, and badly paid tuberculosis officers, if there are insufficient means for expert diagnosis and too few beds for treatment, then a high proportion of non-notified fatal cases will be the rule and not the exception." Of the 1,096 contacts examined during the year thirty-one were diagnosed as tuberculous; this is equivalent to 28.8 per 1,000 contacts examined, as against a proportion of 3.98 tuberculous persons per 1,000 of the population known to the dispensary staff in the county. Dr. Leggat, medical superintendent of the High Carley Sanatorium, gives the following figures, which are perhaps the only ones in this country, comparable with those given by Alexander, on which the benefits of extensive use of collapse therapy can be judged. In the five-year period 1925–9 1,352 patients were admitted, of whom twenty-two had artificial pneumothorax, and the bacillary loss was 19.5 per cent. In the five-year period 1934–8 914 patients were admitted, of whom 243 had artificial pneumothorax, 184 phrenic interruption, seventy division of adhesions, thirty-three thoracoplasty, and five extrapleural pneumothorax; the bacillary loss was 51 per cent.

Correspondence

Treatment of War Wounds in China

SIR,—My experiences of war surgery in China do not altogether support the amazing claims made by Dr. Trueta for the "closed" method of treatment of gunshot wounds. Before the present Sino-Japanese conflict several civil wars together with the activities of bandits over a number of years had supplied us with a steady stream of gunshot wounds with fractures of the long bones, and for many of these we used Winnett Orr's treatment. Probably most of our hospitals in China used all three methods—namely, the "closed" method, the "open-window" method, and skeletal traction on Thomas splints. Since the outbreak of hostilities, over two years ago, our experience has been greatly increased by large numbers of bomb and shell wounds.

It needs to be said that our casualties were usually seen after considerable delay and sometimes even days or weeks had elapsed; the patient's condition was strained by difficulties of transport on a primitive litter over tracks that can only euphemistically be called roads; the first-aid measures which had been applied were of the worst, usually definitely harmful and invariably produced a grossly infected wound. Shrapnel from air raids and shelling often produced frightful wounds with severe mutilation of the soft tissues. Tetanus was not uncommon, but we saw very few cases of gas gangrene. Infection of the deep fascial and muscular planes was a frequent complication of the wounds, so that it was impossible entirely to eliminate the danger of burrowing channels of suppuration by the most radical excision.

We therefore formed the conclusion that compound fractures from gunshot wounds (or shrapnel) were best treated by skeletal traction and Thomas splints. Adequate control of the fragments can be ensured, facilities for the most satisfactory drainage can be provided, the comfort of the patient, without excessive smell, is assured—and these contribute to the surgeon's peace of mind. This particularly applies to fractures of the femur, with possibly infected wounds, which formed a large proportion of our cases. Further, we abandoned Carrel-Dakin irrigation in all save the foulest wounds and considered most satisfactory the use of vaseline gauze packs, changed every ten days or so. The dry gauze pack suggested by Dr. Trueta dams back pus, is painful for the patient when the dressing is changed, and tears away newly forming granulations. Loosely packed vaseline gauze has none of these disadvantages.

Careful selection of cases for the various forms of treatment seems to be necessary. I would suggest that:

(*a*) When casualties are received early (up to six hours) and adequate débridement with reasonable hope of eliminating infection can be effected, the "closed" method is probably the treatment of choice, particularly for comfort during transport.

(*b*) For casualties received later (six to twenty-four hours) in which the damage to soft tissues is only moderately severe, after excision these can best be treated by the "open-window" method. The window of plaster can be reinserted, well padded, after each change of dressing, and if tightly bandaged one does not get overgrowth of granulation tissue.

(*c*) For grossly mutilated wounds or delayed casualties, in which certain elimination of all infective channels is doubtful, the open method, skeletal traction, and Thomas splints should be relied on.

To give a true balance it is necessary to add that no group of our cases treated by these different methods produced results comparable with those obtained by Dr. Trueta.—I am, etc.,

W. S. FLOWERS, M.B., Ch.B.,
Superintendent, Foster Hospital, Chouts'un,
Shantung, N. China.

Knaresborough, Yorks, Nov. 7.

Treatment of Gas Gangrene

SIR,—I was glad to see the letter by Mr. W. A. Cochrane in your issue of November 11 (p. 973) drawing attention to the fact that gas gangrene is often diagnosed too late. During 1914–18 I was radiologist in the Scottish Women's Hospital, Royaumont, France, where we soon learned the necessity for prompt diagnosis of the presence of gas. As we were only twenty-five miles behind the line many of the wounded reached us within a few hours of being wounded, having been taken off the train (half-way to Paris, at Creil) and brought to us twelve kilometres by ambulance. No matter at what hour of the day or night they arrived, the wounds were at once examined and the men sent to the *x*-ray room. Plates were taken and rapidly developed. When gas was found I sent an urgent note to our *médecin-chef,* Miss Frances Ivens. The patients with gas took precedence and were promptly operated on. *X*-ray plates showed distinct types of gas infiltration—(1) a mist, and full of "bubbles"; (2) streaks as of gas penetrating between the muscle fibres. This second type was the most dangerous and necessitated swift intervention. A few hours' delay made the prognosis much more serious. Dr. Weinberg was at that date working on the preparation of the serum which has since received wide recognition.

In the *Archives of Radiology and Electrotherapy* of December, 1916, I published several illustrations of these two types. The plates were also shown at the meeting of the Royal Society of Medicine Electrotherapeutic Section and published in the *Proceedings* of October, 1916. Other plates were published in Miss Ivens's address to the Surgical Section, December, 1916.—I am, etc.,

London, W.1, Nov. 11. AGNES SAVILL.

Treatment of Venereal Disease in the Field

SIR,—Lieutenant-Colonel E. T. Burke's letter in the *Journal* of November 4 (p. 928) is well timed and raises issues of the greatest importance. The wastage of man-power due to venereal disease in the 1914–18 war was emphasized in striking fashion by Sir Archdall Reid when he wrote (recommending methods of prevention), "At that time [spring, 1918] there were, but need not have been, in the venereal hospitals or in depots as convalescents British, French, and American soldiers, mature and trained men, otherwise fit for active service, sufficient not for an army corps only, but for a great army" (*Prevention of Venereal Disease,* 1920).

We are in complete agreement with the main idea underlying Lieutenant-Colonel Burke's valuable communication—namely, that the vast majority of cases of recently acquired syphilis and gonorrhoea can be adequately treated without removal from the divisional area and without complete loss of the man's services. In connexion with the treatment of early syphilis Lieutenant-Colonel Burke, "though not normally an advocate of the concurrent intermittent method of therapy," is "of the opinion that in the special circumstances—treatment in the field—that method should be adopted." As this concurrent intermittent treatment is the method which has been used successfully in the Edinburgh V.D. Clinic for the last twenty years, the following comments have the backing of an extensive experience. This has convinced us that the concurrent administration of arsenic and bismuth from the beginning of treatment affords the most intensive attack on *T. pallidum.* We aim at giving this dual therapy in such a way that the patient is rapidly rendered non-contagious and is not prevented from carrying on his ordinary civilian occupation, or even handicapped in doing so, or deprived of leisure time by frequent attendances.

Does not the weekly administration of 1 gramme of arsphenamine (? arsphenamine diglucoside) represent an ideal rather than a practicable proposition? We find that many patients will not tolerate more than 0.6 gramme "914" weekly, and, provided that bismuth is given concurrently, higher weekly dosage is not required. Three intravenous plus two intramuscular injections per week for eight successive weeks would occupy an unnecessarily large amount of the time of the soldiers and also the medical officers.

We recommend the following scheme as more practicable than that advocated by Lieutenant-Colonel Burke in that it encroaches less on the soldiers' time, and, if carried through, ensures a prospect of cure if not in 100 per cent. of cases at least in 99 per cent. The relapse rate in 675 male cases of early syphilis treated in the Edinburgh clinic was 0.9 per cent.

First or Unit Course

Week	Neoarsphenamine ("914") intravenously gramme	Bismuth intramuscularly gramme
1	0.3 0.45	0.2
2	0.3 0.3	0.3
3	0.6	0.3
4	0.6	0.3
5	0.6	0.3
6	0.6	0.3
7	0.6	0.3
8	0.6	0.3
9	0.6	0.3
10	0.6	0.3
Total	6.15	2.9

This unit course is followed by an interval of four weeks, and four unit courses are given provided the blood Wassermann (if positive at the start) be reversed by the first course. Completion of the active treatment is followed by three-monthly serological tests (blood Wassermann and Kahn) for two years. Provided bismuth is given from the start, it is, in our opinion, unnecessary after the first fortnight to give either the "914" or the bismuth more often than once weekly. Also, if the "914" is given twice weekly in the first week or fortnight it is sufficient to give the slowly absorbed bismuth metal once weekly. We prefer injectio bismuthi *B.P.* to the oil-soluble preparations; with the former, once-weekly administration means less stiffness and less pain in the hip muscles. Moreover, the gap in the administration of the arsenical drug is reduced (in our scheme) from seven weeks to the safe interval of four weeks. For those physicians who wish to use neoarsphenamine instead of stabilarsan, ampoules of sterile distilled water could be made just as readily available as those of sodium thiosulphate.

The plan of treatment outlined above, as contrasted with Lieutenant-Colonel Burke's, effects a saving in time and expense, with possibly greater efficiency through greater practicability. The adoption of this scheme would mean that after the first fortnight (during which "sores" are healed and non-infectivity secured) the soldier is available for full duty except for a once-weekly visit to the divisional treatment unit. Diagnosis and treatment would be facilitated and economy effected if the unit were a mobile one housed in a specially equipped ambulance car.

The routine to be followed in cases of gonorrhoea would be simplified without loss of efficiency by omitting irrigation during the first five days of chemotherapy. In cases in which the discharge persists, use irrigation of the anterior urethra for five days with a 1 in 10,000 solution of potassium permanganate, followed by five days of posterior irrigation with the same solution. Cases which resist this regime should be evacuated to a base hospital. A higher proportion of cures would be attained by using a higher initial dosage of sulphapyridine (M & B 693)—for example, six grammes in the first twenty-four hours and five grammes in the second. Administration of tablets of nicotinic acid in doses of 0.2 to 0.5 gramme per diem along with sulphapyridine reduces the toxic effects without diminishing the therapeutic efficiency.

It should also be stressed that the incidence of venereal disease among the troops can be minimized by sufficient provision of methods of prevention, such as facilities for prophylactic washing, irrigation, and inunction with mercurial cream, and the issue to all who desire them of condoms and prophylactic packets. New methods of prophylaxis and other means of minimizing infection may be evolved.

In conclusion, we wish to express our appreciation of the value and importance of the suggestions contained in Lieutenant-Colonel Burke's letter. Possibly the Army medical authorities have already forestalled them by introducing some similar organization, and information on this point would reassure the public that every effort has been made to prevent the tragic sequels of venereal disease.—We are, etc.,

R. C. L. BATCHELOR.
Edinburgh, Nov. 10. ROBERT LEES.

SIR,—Lieutenant-Colonel E. T. Burke's scheme of treatment for early syphilis as suggested in his letter is surely far too long and unnecessarily complicated.

I have since 1924 practised in the clinics I direct a course of treatment in primary and secondary syphilis which secures serological and clinical cure in 100 per cent. of cases and which gives a completely normal cerebrospinal fluid in the fifth year after infection. One course invariably reverses the Wassermann in sero-positive cases, but to ensure cure three courses are given—one three months after the first, and the third six months after the second. Two days in each week, not more than four days apart, are set as injection days. If Monday and Thursday are chosen, then 0.3 gramme N.A.B. is given on Monday and 0.45 gramme on Thursday until twelve injections have been administered; and every Monday 0.2 gramme of bismuth as bismuth oxychloride is given. In short, this course accomplishes in eighteen weeks what the suggested course takes forty weeks to do, and calls for thirty-six intravenous injections as against ninety-six, thus saving time and money.

I do, however, find myself in agreement with Lieutenant-Colonel Burke on the choice of sodium thiosulphate, since in 1925 I instituted its use as a vehicle for intravenous "914" in the treatment of syphilis.—I am, etc.,

A. O. F. ROSS,
Nov. 9. Venereal Diseases Officer, City and Port of Liverpool.

SIR,—During the 1914–18 war I had considerable experience of the treatment of venereal disease in the Army at the Brighton Grove Military Hospital of some 1,200 beds. At this period hospitalization until cure of every case was considered essential. I can therefore endorse Lieutenant-Colonel E. T. Burke's views as to the enforced idleness and wastage of man power so urgently needed elsewhere.

Since 1918 I have been continuously associated with the civilian clinics in this area, and have long since abandoned the view that hospitalization of other than complicated cases of venereal disease is necessary or desirable. The incidence of complications in gonorrhoea has been remarkably low, considering that over 50 per cent. of the patients are engaged in heavy manual labour. Cases of proved accidental contagion have been rare—chiefly vulvo-vaginitis in pre-pubertal girls and an infrequent case of *lues insontium*. The civilian clinics have adequately proved the possibilities of ambulatory treatment and the little risk of accidental contagion even in overcrowded areas.

In syphilitic infections the thrice-weekly dosage advocated by Lieutenant-Colonel Burke is impracticable in this area, but the results of a once-weekly dosage of 0.6 to 0.75 gramme of neoarsphenamine and insoluble bismuth (0.2 to 0.4 gramme) or mercury (1 to 1½ grammes) have given a high clinical and serological cure rate in early infective syphilis in the absence of default, gross intolerance, etc. Treatment is given in courses of ten to twelve weeks, totalling 4.65 to 6.75 grammes of "914" and 2.4 grammes of bismuth, and the patient receives three courses after his first negative Wassermann reaction. In my opinion Lieutenant-Colonel Burke's suggestions do not go far enough, as his "thrice-weekly" course necessitates considerable interference with duty, which would be obviated by the once-weekly system.

No uncomplicated case of gonorrhoea or syphilis should be off duty, whether in the front line or not. Investigations and the treatment could be carried out at battalion headquarters or other suitable rendezvous by mobile specialist units attached to brigade or divisional headquarters.

In gonorrhoea treatment with sulphapyridine (M & B 693) in initial doses of 4 grammes daily for three days, followed by two three-day courses of 3 to 4 grammes daily, has been well tolerated and given 80 to 85 per cent. cures on a three-months observation basis. Relapses and refractory cases are invariably associated with sealed-off foci in the prostate and vesicles or in the urethral glands. Late relapses have been noted up to seven months after infection. Despite apparent rapid cure, investigation for residual infections and tests of cure over a considerable period of time are necessary if considerations other than those of fighting fitness are to be taken into account.

In chancroid, where this is suspected in the absence of spirochaetes in a sore, treatment should be started forthwith with sulphanilamide or sulphapyridine. The use of these drugs will not prevent the demonstration of spirochaetes in any later examination, but will prevent any risk of phagedaena, etc.

With regard to records, every man undergoing treatment should carry a personal V.15, while records would also be kept by battalion headquarters or by mobile V.D. units, and transferred with the man.

Much of the above is also applicable to the "home front"; in view of the urgency of conserving hospital beds for A.R.P. eventualities.—I am, etc.,

Newcastle-upon-Tyne, Nov. 10. S. THOMPSON.

SIR,—I was very glad to read the letter of Dr. C. Hamilton-Wilkie in the *Journal* of November 11 (p. 974) regarding mine upon the above subject which appeared in the previous issue. Dr. Wilkie's unit course is certainly an excellent one; and, since his whole schedule of treatment by four such unit courses administered in a period of fifty-two weeks gives an efficiency index of 110, the cure rate must be one of 100 per cent. All treatment schedules for acute syphilis lasting for from twenty-six to forty-eight or more weeks whose efficiency indexes do not fall below 60 give such a cure rate. The schedule I advocated in my letter has an index figure of 116.

I had carefully considered the utilization of mobile V.D. units, but for a variety of reasons I came to the conclusion that stationary V.D. sections would be preferable. My view is that a soldier suffering from venereal disease should, while undergoing active treatment, be admitted to a V.D. section of the R.A.M.C. stationed in the corps or other area in which his unit is situated, and that he should be continually under observation. If, for example, the V.D. section was attached to a C.C.S. the man would, during his course of treatment, perform general duties, guards, etc. According to my suggested schedule of treatment for syphilis he would, as Dr. Wilkie points out, receive in every seven-day period three intravenous and two intramuscular injections. I regard that as being a most valuable method of keeping the man under closer and more continuous observation than he would be if Dr. Wilkie's suggestion were adopted. If complications due to treatment are to be avoided or diagnosed at the earliest moment the patient cannot be seen by the medical officer too often. I am convinced that it would be a bad principle to treat the man in his own unit by means of a mobile V.D. section, when he would be seen only twice weekly.

I feel sure that Dr. Wilkie and every experienced venereologist consider that it is to the advantage of the patient, the Army, and the civil population at home that all cases of venereal disease should be treated in the field.—I am, etc.,

E. T. BURKE,
Director of the L.C.C. (Whitechapel) Clinic.
London, E.1, Nov. 11.

Blood Transfusion

SIR,—I have read with interest Dr. J. L. Hamilton-Paterson's article on the use of stored blood for transfusion (*Journal*, November 4, p. 908). In five years of blood transfusion service in the University Medical Clinic of Turin, Italy, and in a field hospital in Spain, I have had a fairly good experience on this matter, both in peace and war; my conclusions (*Minerva Medica*, 1938, 23) are in complete agreement with those of Dr. Hamilton-Paterson. In the Spanish war no fewer than ten thousand transfusions were performed with blood conserved in a citrate–saline mixture (Russian method) and severe reactions were never observed. Very often, however, I had the impression that the same therapeutic result could have been obtained with a simple intravenous injection of the same dose of saline. The dramatic improvement which follows the pure-blood transfusion rarely appeared after stored-blood transfusion. The value of stored blood is definitely inferior, and, therefore, pure-blood transfusions should be used whenever possible.

Obviously enough, near the front line, in field hospitals, and in other mobile units the casualties requiring urgent transfusion are too numerous in comparison with the volunteer donors available in the zone, and stored blood is absolutely indispensable during a battle. Only when there is no rush of wounded is it possible to perform single fresh-blood transfusions, usually with blood given by the staff of the sanitary unit. In towns, where the casualties should amount to only a small percentage of the population, fresh-blood transfusions are possible and could be employed as a general routine, while only a small amount of blood might be kept stored for exceptional requirements. Blood donors classified according to their residence and the place of their employment could be available a few minutes after a telephone or personal call.

On the other hand it must be kept in mind that the stored blood also requires some preparation at the moment of its use, since it must be warmed to the body temperature, avoiding any exposure to a fairly superior heat. That cannot be made in advance, because the blood must be kept in a refrigerator as long as possible in order to avoid haemolysis. Thus the time of its preparation has no advantage over that of waiting for the arrival of a donor living in the neighbourhood. Furthermore, in all cases in which the stored blood will not be used before the expiration of its conservability there is an enormous waste of blood as well as of material for its collection and conservation.

In view of its therapeutic and economical advantages the fresh-blood transfusion service might be adopted in many towns, also in war time, and there is no reason why it should not operate smoothly. The stored blood should be reserved, so far as possible, to the very war zone, where it will be too difficult to find a sufficient number of donors at the moment when the most transfusions are required.—I am, etc.,

London, W.2, Nov. 7. PAOLO RAVENNA, M.D.

Gas Injuries to the Eye

SIR,—In the *A.R.P. Handbook No. 3,* page 59, line 12, the treatment for injury to the eyes from mustard gas includes the use of 1 per cent. atropine ointment every twelve hours. This no doubt was the proper treatment for the cases in the last war, when the majority of victims of mustard gas were soldiers under 40 years of age. Now that many old or middle-aged persons may be gassed the danger of precipitating or increasing glaucoma by such treatment is very great. I think it will be agreed that, even in the emergency of a gas raid, homatropine alone should be used instead of atropine for all but the young, and after the first application should not be repeated except under skilled medical advice. Otherwise terrible catastrophes may occur.—I am, etc.,

Colchester, Nov. 12. AGNES ESTCOURT-OSWALD.

SIR,—It would be desirable to know if Brevet Colonel L. T. Poole's opinion, as conveyed in his letter in your issue of November 11 (p. 972) addressed from the War Office, is the official Army medical view of the immediate treatment of mustard gas in its effects on the eyes—namely, that Nature with its lacrimal secretions supplies the best and apparently only first-aid measure required.

From Professor J. H. Burn's letter in the same issue of your *Journal* it appears that the German medical service uses other measures. In the French army a different treatment is in use.

For the almost suicidal pain at first experienced what does Colonel Poole suggest? Apparently only tears!—I am, etc.,

London, S.W.1, Nov. 11. REDMOND ROCHE.

SIR,—I have had no experience of first-aid treatment of mustard-gas burns of the eye, but during my sixteen years' service as ophthalmic surgeon at the Liverpool Pensions Hospital I saw many cases of its after-results.

For the recurrent attacks of subacute inflammation, keratitis, and severe pain I found that instillation of cod-liver oil was by far the best treatment. Relief of pain was immediate, followed by rapid disappearance of corneal roughness and lacrimation; and the treatment was easily carried out at the patient's home. First-aid treatment with cod-liver oil could do no harm and would relieve pain and promote surface healing. I would like to make a further suggestion about this remedy. It might be worth while to try the effect of the inhalation of atomized cod-liver oil in the treatment of pulmonary gas cases of the chronic type, perhaps even of the acute cases.—I am, etc.,

Hoylake, Cheshire, Nov. 13. EDGAR STEVENSON.

SIR,—I must ask your forgiveness for joining in this vital discussion, as, frankly speaking, I never yet saw or treated a similar case. But it is obvious that we are powerless against the chemical reaction of the direct contact of mustard gas with the eye, and we can only fight against the secondary infection complicating the initial injury. From that point of view I see a great similarity with the acute gonorrhoeal conjunctivitis of adults, and I usually had very striking results by giving the patient a protein shock (I prefer the T.A.B. vaccine) and continuous irrigation with a weak solution of potassium permanganate. I should be grateful to ophthalmologists of more experience than myself for their opinion of this kind of treatment in mustard-gas cases where the vascular system is not involved as yet.—I am, etc.,

London, E.1, Nov. 4. N. PINES.

Psychological Casualties in War

SIR,—I have read with great interest the letters of Dr. T. A. Ross and Dr. R. D. Gillespie in your issue of November 4 (pp. 925 and 926), and my many years' experience of psychiatry allows me to appreciate much in those letters.

My experience of the last war was that many potential mental cases were conscripted, in spite of strongly worded opinions of myself and others. Cases of adolescent insanity with short remissions, cases of mild epilepsy with post-epileptic automatism, and cases of hallucination of hearing and delusions of persecution were taken into the Army. Unfortunately I could not find out what had happened to them, but I knew they were quite unfit to be fighting soldiers. It would be of interest to know what became of these men, as also the number of men discharged on account of mental disease of some sort. In my medico-legal experience with cases under the Employers' Liability Act I have had difficulty in getting hold of the discharge papers of the plaintiffs, but in each case I ultimately found they had been discharged on account of delusional insanity, which had a great bearing on the ultimate result of the actions.

My experience while I ran a home for borderline cases was that as the war proceeded lady patients were falling off, and I soon found the reason: occupation of all sorts was keeping them well. Some took up Red Cross work, some helped in canteens, some drove cars and ambulances, while many took the place of conscripted men in banks and other places of business. In consequence their tendency to psychoneurotic ailments disappeared and many homes for such cases suffered very severely.—I am, etc.,

Bournemouth, Nov. 7. L. A. WEATHERLY, M.D.

SIR,—The letter from Dr. T. A. Ross in the *Journal* of November 4 (p. 925) calling attention to inadequate mental history taking and its unfortunate results of men called up or volunteering for service in H.M. Forces is one of first importance. Dr. Ross invites those of us who have met with cases similar to the two which he describes to write to him concerning them so that he may assess the gravity of the problem with a view to its solution. I hope that those who can assist him in this way will avail themselves of his invitation, for, if

I am not mistaken, the trouble is likely to increase and not diminish unless something can be done.

I too have already since this war began met with two instances of men being accepted for service who, had their histories been taken more carefully, would undoubtedly have been rejected. I would send details of these cases direct to Dr. Ross, as he asks, but it occurs to me that if I send them to you perhaps you might consider it useful to publish them in your columns if for no other reason than to call further attention to Dr. Ross's important letter.

Case 1.—A young man aged 21 was called up for service in the Militia during the summer. He was immediately examined, passed as fit, enrolled, and duly went to camp, from which he promptly ran away. He appeared at home, was seen by the family doctor, who correctly diagnosed acute anxiety neurosis, and a certificate to this effect was sent to the authorities. The father, whilst awaiting "instructions," brought the patient to me. At the first interview, which was short as I was hurried and the matter was urgent, it became obvious that the man was but poorly adapted to life. He hated school, never made friends with any boys or masters, took no interest in usual boyish occupations, but preferred to play the piano, jazz, etc., and to "make up," preparatory, he said, to going on the stage one day. His parents tried ineffectually to dissuade him from this course and offered him a choice from all the professions, but he refused. When attempts were made to discuss these matters with him he would become sullen, threatened suicide, and would disappear for hours on end. This behaviour, virtually blackmail, rendered his parents powerless. This, I think, is enough to show how unsuitable he is for military training, anyway at present. And I am of opinion the authorities should be thankful he deserted and thereby spared the country much expense and himself much suffering.

Case 2.—A man aged 28, a university graduate doing well in law, offered his services to the Army and was passed as medically fit. Shortly afterwards, while continuing his work and awaiting orders to go for training, he was suddenly seized with panic in a train. This attack was followed by others in quick succession, every day and with increasing severity. He came to me for advice, and his history as given that day revealed that for some years he had had a struggle with panics and fears—fear of his evangelical irritable father, fear of God, fear of men, and fear of going mad as a sister had died in an asylum. He had fought these fears and, as he said, had "conquered them," and was perfectly free from their effects when he offered himself for service. He did not mention his old trouble then, although probably given an opportunity to do so, because he did not realize its importance. Fortunately enlistment revealed, in time, the true state of affairs.

While on this subject may I say how helpful it would be for all concerned if some degree of uniformity could be decided upon as to the advisability of passing as suitable for service men who have had serious "nervous breakdowns" but who are now, after treatment, quite well. Two weeks ago an old patient who had had a schizoid illness with well-organized delusions was told by a doctor who knew he had once had a mental illness, but who did not know the history, that he was fit for service. Actually he was rejected because he was truthful enough to say he had been ill, but under the impression gained from the doctor he might, almost justifiably, have not mentioned the fact.—I am, etc.,

Byfleet, Surrey, Nov. 6. **H. Mark Palmer.**

Psychological Treatment Centres

Sir,—Dr. R. D. Gillespie (*Journal*, November 4, p. 926) suggests that during war "mental breakdowns of any sort may be fewer in the civil population than during peace." As evidence he quotes the somewhat lower incidence of admissions to mental hospitals during the years 1914-18. This appears to be his chief argument for adopting an optimistic view regarding the probable effects on mental health of the present war. But what of the years following 1918? Does Dr. Gillespie assume that the great war had no effect on psychoses certified then? Those with experience of mental cases know that a very large proportion of the psychic casualties of the last war, both civilian and service, did not become notifiable until some years after the war.

I think it is axiomatic that a period of great national stress, combined with a profound disturbance of normal routine, a period moreover of privation and danger, must produce more psychosis and neurosis. The disturbance of war involves a two-fold change—first peace to war, and then war to peace. The second change may be the more devastating for some individuals. I believe that potential subjects of psychoses given a fortunate environment may succeed in passing through life as useful citizens without quitting the ranks of those apparently normal mentality. On the other hand, any of us is capable of becoming psychotic. Wordsworth wrote of "man's unconquerable mind." He was wrong. We have only to think of solitary confinement in a dark and dirty mediaeval dungeon to realize this.

It is rather curious to find that Dr. Gillespie thinks that the British public will stand the stress of war well, but that "too wide advertising of emergency psychotherapy" causes a risk at the present time of "creating a national hypochondriasis." Centres such as Dr. A. C. D. Telfer suggests are required. Let us save such people as we can from the appalling fate of ending their days in a mental hospital or even of becoming chronic neurotics.—I am, etc.,

London, S.E.14, Nov. 4. **Allan A. Macdougall.**

X-ray Examination of Militiamen

Sir,—I have been following with great interest the correspondence in your columns on the subject of *x*-ray examination of the chest in militiamen. Having myself during the last three years screened over 10,000 industrial workers near London, I am very much aware of the necessity for *x*-ray examination of militiamen as part of the examination to be carried out on admission for military service. As I pointed out at the twenty-fifth Annual Conference of the National Association for the Prevention of Tuberculosis in June, 1939, my *x*-ray examinations showed that nearly 1 per cent. of the industrial population (exactly 8.3 per thousand, of which 0.2 per cent. are men and 1.2 per cent. are women) were found to be suffering from active pulmonary tuberculosis and had to be admitted into hospitals or sanatoriums for treatment. The workers were men and women between the ages of 14 and 55, and no definite preference of the disease for any age could be found.

I cannot agree with Dr. Gregory Kayne (*Journal*, October 7, p. 745) that *x*-ray examinations carried out by non-expert radiologists or physicians not specialized in tuberculosis are more likely to be a disadvantage than an advantage to the authorities on account of the mistakes made in interpretation of the findings. The interpretation of lung shadows by screening can easily be learned by any general practitioner with average intelligence in a few weeks, and with the help of *x*-ray photographs and sedimentation test of the suspected cases a fairly good judgment can be exercised about the activity of the lung process. Where there is any doubt the cases found active on routine examination can still be submitted to expert radiologists and tuberculosis physicians for opinion—as is always done in tuberculous cases found among the workers—for a final decision. According to my findings that 0.2 per cent. of working men are suffering from active pulmonary tuberculosis, about 1,000 men of the 500,000 standing Army are now doing heavy physical training and are exposed to all weather conditions, whereas they ought to be in sanatoriums having treatment for their lung disease. As the screening is bound to miss about 10 per cent. of the early infiltrations the estimated figure has to be put accordingly higher.

And now a word about screen photography. This method, in an improved form, has been compared with fluoroscopy and radiography by Burger of Eindhoven on 200 patients, and he found that radiography and screen photography gave about the same result, but the latter is in some respects superior to fluoroscopy. It is quite possible that some authorities—according to Dr. Kayne in the *Journal* of October 7 (p. 745)—consider this method unreliable, but I do not happen to know many methods in medicine about which all authorities agree. Whichever method is carried out, the fact still remains that we are in a position to prevent unnecessary suffering to a great many people and save a great deal of expense to the country, but we just do nothing about it.—I am, etc.,

London, W.1, Nov. 6 **L. Banszky.**

A Drop-wrist Splint

SIR,—By "dropped wrist" one usually infers dropped fingers and thumb—that is, an involvement of the posterior interosseous branch of the musculo-spiral nerve. If Mr. J. S. Kellett Smith means that his splint, illustrated in your issue of November 4 (p. 914), is literally one for a paralysis of extensor carpi radialis longior, brevior, and ulnaris only, well and good; but if not, I have seldom seen a worse one.

The illustration shows that the metacarpo-phalangeal joints of the fingers are flexed at an angle of 45 degrees and that the flexor longus pollicis is strongly in action, and in addition that there is no thumb abduction. In other words, the fingers and thumb are gripping the splint, and I cannot believe that this produces a satisfactory relaxation of extensor communis digitorum, extensor longus pollicis, brevis pollicis, and extensor ossis metacarpi pollicis. I can understand the men "appreciating" his splint, because when wearing it they could use their fingers and thumbs. However, his answer may be that he means "wrist-drop" only.

To maintain full relaxation in a complete musculo-spiral paralysis below triceps, nothing, in my opinion, beats a light long aluminium splint with thumb piece.—I am, etc.,

JOHN SAINSBURY, M.B., B.Ch.,
Late Medical Officer i/c Special Surgical
London, W.1, Nov. 10. Military Hospital, Ducane Road.

Administration of A.R.P. Casualty Services

SIR,—I read with interest the views of your correspondent "Casualty Service" in the *Journal* of November 4 (p. 929).

On the unification of the A.R.P. casualty services and hospital services and their co-ordination with the existing State medical services will depend the saving of life and mitigation of suffering as a result of enemy bombardment of the civil population. As regards training and recruitment accepted standards throughout the country should be arrived at; there would be no objection to local authorities conducting their own courses and examinations provided a recognized standard was reached in both cases. The administration of the A.R.P. casualty services should be in the hands of a competent medical officer. Such officer should wherever possible be the medical officer of health. He should be held responsible for the efficiency of the services in his area and to this extent given commensurate authority; in matters of less degree he should be given full powers, but major issues should be subject to the approval of higher authority. All this would have to be worked out, as it already has been in the defence medical services. Collective training should be carried out under the direction of the medical officer of health with the assistance of the local A.R.P. organizer and his staff; combined training likewise, along with the heads of the other services.

The suggestion of a sessional fee for attendance at a first-aid post during a raid would not appeal to me; so much is being done voluntarily that this additional demand seems somewhat invidious. Nurses at first-aid posts are as essential as the posts themselves. One nurse per post is well-nigh useless unless she is supported by several trained auxiliaries. The important point is that these people should live within easy reach of the post in order that it may be manned at very short notice. Only in very few instances indeed will this be found to be the case, and because of this I am very doubtful as to the ultimate value of first-aid posts. If, on the other hand, first-aid posts are to be staffed by inferiorly trained personnel who may or may not be available at short notice, these units as at present planned will be a menace rather than an advantage in reducing the air raid mortality rate. It is certainly expecting too much of first-aid-party personnel to decide the disposal of casualties on the spot; it would not be easy for experienced medical men working, as they might be, in protective clothing and respirators under subdued light. The alternative is to have medical officers on call who would go along with the first-aid parties to the scene of action. If, as we are told, medical officers would not be available, then it would seem far safer to send all casualties direct to hospital, where they could be seen at once by medical officers, who would decide their disposal.

Mobile units sound very attractive, but the delay involved in setting up a first-aid post at a building, if any, at or near the scene of disaster involves a serious time factor, and I doubt very much whether it would not be better to send all casualties direct to hospital after the most elementary first-aid treatment. A first-aid post adjacent to a hospital is in my view essential. The hospital must inevitably receive a number of casualties which after all only require elementary first-aid treatment. This would certainly be the case if casualties for some reason or another were sent direct—the nearest first-aid post might be too far away, and the mobile unit out of action.

The most useful function of scattered first-aid posts is that of decontamination of unwounded or slightly wounded casualties. Occasionally one will meet the case—a pretty desperate one—where the medical officer might have to decide whether to tackle the decontamination or the injury first. With skilled assistance both could be dealt with at the same time. There can be no doubt that any means at all which will expedite decontamination should be carefully considered.

I rather thought that the equipment of first-aid posts was of a high grade, much higher than I anticipated, and it obviously caters for a standard of first aid much more advanced than is generally recognized. Whether this will turn out to be a good or a bad thing remains to be seen.—I am, etc.,

H. MAINWARING HOLT, M.B., B.S., D.P.H.,
M.O.H., Borough of Keighley; Controlling Officer,
A.R.P. Casualty Services, Keighley, Bingley,
Nov. 7. Shipley, and Denholme Joint Area.

Genito-urinary Infection in Childhood

SIR,—It was gratifying to find in the excellent article by Dr. Wilfrid Sheldon (*Journal*, September 9, p. 551) that he emphasized the need for a complete urological examination if pus and organisms were still present in the urine after the acute symptoms had subsided. It is possible that the more frequent occurrence in male infants may be due to the greater possibilities for minor degrees of stasis owing to maldevelopment or under-development of the urinary tract below the bladder sphincter.

The need for constant supervision of the reaction of the urine in these cases is repeatedly stressed, as it must be to-day. In my opinion litmus paper is obsolete for this purpose, and should be replaced by definite estimations of the urinary *p*H. I have found that "nitrazine" paper manufactured by Squibb is sufficiently reliable for constant clinical use. As an example, if the urine has a constant *p*H value of 7 or 7.5 it is useless to give any mandelate until the *p*H has been brought nearer 5. If the administration of acidifying agents fails to influence the *p*H the infection is probably due to a urea-splitting organism, in which case urinary antiseptics acting in an acid medium are useless.—I am, etc.,

Durban, South Africa, Oct. 5. S. MCMAHON.

Lambliasis

SIR,—In your annotation on lambliasis in the *Journal* of November 11 (p. 961) the only reference to treatment is the statement that "it appears that arsenical preparations, especially stovarsol, are effective." Since Pierre Martin recorded in 1937[1] the disappearance of *Giardia* from the stools of one of his patients treated with atebrin by Professor Galli-Valério there has been a very considerable number of papers confirming the effect of this drug, or its French equivalent quinacrine, on this infection, and the remarkable results obtained would suggest that this preparation should be the first considered where treatment of lambliasis is indicated.—I am, etc.,

London, W.1, Nov. 10. F. MURGATROYD.

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[1] *Rev. méd. Hyg. trop.*, 1937, **29**, 33.

Crataegus Oxyacantha in Hypertension

SIR,—The significant feature in Dr. James D. P. Graham's investigation of tincture of crataegus (*Journal*, November 11, p. 951) is the reduction of the pulse pressure caused by the large doses of the tincture. In every case except Case 8 the systolic pressure fell more steeply than the diastolic. This reduction of the pulse pressure I consider the chief clinical indication for crataegus medication. I have used it for a number of years with success in such cases, employing, however, much smaller doses (1 to 5 minims)—first, in those hyperpietics with a hypertrophied left ventricle, a regular pulse, and early signs of failure, such as breathlessness and paroxysmal nocturnal dyspnoea; and, secondly, in those patients who are recovering from a coronary thrombosis. I can confirm its failure in auricular fibrillation.

Dr. Graham had selected from his hyperpietics a small group whose renal or cerebral arteries had broken down under high pressure. I hope that if he extends his investigations he will next select a group in which failure is manifested in the heart itself.—I am, etc.,

Bristol, Nov. 12. FRANK BODMAN, M.D.

Immunization against Diphtheria

SIR,—Sir John Ledingham deserves to be congratulated upon his lecture and masterly summary of the present position of immunization (*Journal*, October 28, p. 841) and also because he had the courage to label certain societies as "anti-social." He uttered a truth when he suggested that liberty can become anti-social and that when it does it should be curtailed. I would suggest that he give another lecture and pillory by name these anti-social societies and call for their suppression. The attitude of the State and the profession towards vaccination has helped their propaganda and should be reviewed. Small-pox is not the scourge it was when compulsory vaccination was imposed. The danger having passed, the vaccination should pass too. If not, the law is held in contempt. It is bad when the law is held in contempt or becomes unenforceable. A law is bad when it is not necessary and is vexatious.

On the other hand, diphtheria is recognized by all as a dangerous disease. The mass of the people are willing to submit to a measure which will guarantee them a reasonable chance to escape from it. This is borne out by the attitude of the mass of Irish people towards immunization. In private practice parents ask for the treatment. I submit that the public are aware of the existence of this potent preventive treatment and wish it to be administered in an effective manner. I believe they would accept compulsory immunization and welcome it.—I am, etc.,

Clones, Nov. 4. M. G. KIERANS.

Virtues of Brown Bread

SIR,—Work on nutrition, particularly here in India, of Sir Robert McCarrison, and on vitamins throughout the world, has established that white bread as commonly used in England lacks vitamin B and is inferior to brown bread milled from whole wheat. I suggest that the British Medical Association urges the Government to bring in measures to encourage, if not to enforce, the eating of brown bread by everyone, at least during the war. At no time can we afford to waste the health and vitality of the nation—least of all during the present war.—I am, etc.,

GEOFFREY TAYLOR, Major I.M.S.,
Nov. 1. Professor of Clinical Medicine, Lahore.

In reply to numerous inquiries the Clothes Room Committee of the Ladies' Guild of the Royal Medical Benevolent Fund announces that the work is being continued throughout the present national emergency. Existing conditions make every effort much more difficult, but it is hoped that the committee may have sufficient support to help all beneficiaries. Parcels of clothing can be sent as usual to B.M.A. House, Tavistock Square, W.C.1.

Obituary

A. P. BEDDARD, M.D., F.R.C.P.

Consulting Physician to Guy's Hospital; Chairman of the Pharmacopoeia Commission

We regret to announce the sudden death on November 8 at Sandiway, Cheshire, of Dr. Arthur Philip Beddard, who was for many years a member of the senior staff of Guy's Hospital and in recent times served as chairman of the British Pharmacopoeia Commission. Dr. Beddard was vice-president of the Section of Anatomy and Physiology at the Annual Meeting of the British Medical Association at Belfast in 1909, and vice-president of the Section of Medicine at the Brighton Meeting in 1913. With his passing at the age of 72 there is the loss of an outstanding physician of the older school who had a real flair for clinical medicine.

He was educated at Shrewsbury School, where at a very young age he became head of the school and then was sent to work under the late Professor Ray Lankester in the University of London. The following year he entered Trinity College, Cambridge, of which he was a science scholar, where he studied comparative anatomy, and in both parts of the tripos and passed with first-class honours. In 1891 he decided to take up medicine and entered Guy's Hospital, graduating M.B., B.Ch.Cantab. in 1897. He gained his doctorate in 1899 and was made a Fellow of the Royal College of Physicians in 1903. His career had always been basically scientific, for having had such a distinguished training in biology he became demonstrator of physiology with the late Professor M. S. Pembrey and Professor E. H. Starling, with whom he did much valuable research work on problems of respiration and on functions of the kidney. At the same time he lectured in pharmacology at Guy's, and always retained throughout life an interest in this subject which led him after retirement from hospital practice to be chairman of the British Pharmacopoeia Commission. During these years of demonstrating physiology Beddard was appointed assistant physician and later became physician and consultant physician to the West London Hospital. In 1902 he took the vacancy created by the retirement of his godfather, Dr. Pye-Smith, from the Guy's staff, and he continued his work as a physician at Guy's Hospital until his retirement in 1927.

As a teacher he was outstanding; with an orderly mind of his own he had the great advantage of being able to impart his knowledge to his students, with the consequence that his teaching rounds at Guy's were always well attended, and no one went away from any round without a feeling of an afternoon well spent. He hated long names which often cloaked ignorance of a subject, and was particularly caustic with anyone who made use of subterfuges of any kind. His outspoken methods and utterances against quackery and ignorance of the elementary principles of biology and medicine caused him to be feared by some and to clash with others. But his honesty of purpose and his outstanding ability were recognized and admired by all. As a clinical observer, no detail was too small to be overlooked, and he was never content with a diagnosis unless he could fit all the known facts of the case into the making of the diagnosis. His last clinical round at Guy's will never be forgotten by those present, who included a number of the honorary physicians and surgeons. At the dinner in his honour which followed, every past house-physician was asked to tell two true stories of Beddard, and the quality of his quiet humour was shown not only by the quality of the stories but by his reply, in which he congratulated those present on the stories told but said he had no knowledge of any of the incidents recalled! As a physician he made a specialty of chest work; no one could elicit physical signs from a chest in the way that Beddard did. Probably his love of music was a great factor in this, for he was a skilled musician and had a vast knowledge of music.

Beddard enjoyed exceptionally good health until five years ago, when, following influenza and bronchitis, he developed asthmatic signs, which continued to undermine his health. The sympathy of all his friends and past students will go in deep measure to his wife, son, and daughter, who survive him.

E. C. W.

Dr. C. H. Hampshire, secretary to the British Pharmacopoeia Commission, writes:

The name of Dr. A. P. Beddard will always be remembered in connexion with the *British Pharmacopoeia.* The first British Pharmacopoeia Commission was appointed by the General Medical Council in 1928, following upon an inquiry by a subcommittee of the Committee of Civil Research into the method of production of the *Pharmacopoeia.* The *British Pharmacopoeia, 1914,* was in need of revision, and it was desirable in the public interest that a new *Pharmacopoeia* should be produced in the shortest possible time consistent with thorough work. Dr. Beddard was appointed chairman of the Commission and entered enthusiastically upon his duties, bringing his great intellectual gifts to bear upon the many problems of policy and of detail which are involved in the production of a pharmacopoeia. He was largely responsible for the policy of developing the *Pharmacopoeia* as a book of standards, while still retaining in it those features which are necessary to the maintenance of its position as an authoritative guide to the medical profession in the choice and use of drugs. He was keenly interested in the collaboration which was effected with committees on pharmacopoeia revision in the Dominions, and in maintaining the influence and usefulness of the *Pharmacopoeia* throughout the British Empire. His great breadth of view was also shown by his interest in establishing and maintaining collaboration with the pharmacopoeia authorities of other countries, in particular of the United States of America.

For nearly four years the Pharmacopoeia Commission met weekly and, under the guidance of Dr. Beddard, dealt with the considerable volume of reports, comments, and criticisms furnished by various subcommittees and correspondents. Dr. Beddard's charm of manner and qualities of leadership made him the ideal chairman in these early years. In the chair he always displayed great patience, preferring to allow difficult problems to solve themselves in friendly discussion rather than to force an issue. In private he gave unsparingly of his time and thought to the details of the work. I shall always retain the memory of long afternoons spent with him pleasantly, and without tedium, in the examination of drafts or the revision of proofs. A flash of wit or a sarcastic phrase would often enliven the task. When the sixth *British Pharmacopoeia* was published in 1932 it could truly be said that he was prepared to take personal responsibility for every statement made in it.

Four years of similar devoted work went to the production of the *Addendum,* which appeared in 1936, and he retained to the end, notwithstanding failing health, the control of the preparation of the seventh *British Pharmacopoeia,* which is now approaching completion. Eleven years of unremitting voluntary toil on pharmacopoeia revision represents a considerable public service, which should not be forgotten. His death means a loss to pharmacopoeial work which will be deplored by all his colleagues and helpers. To me it means the loss of a friendly, considerate, and inspiring chief.

[The photograph reproduced is by Elliott and Fry, Ltd.]

MABEL CAMPBELL, M.A., M.B.

The death of Dr. Mabel Campbell, which took place on November 3 at Allendale, leaves Newcastle-upon-Tyne and district the poorer by the loss of one of its best-known medical women and one of the most respected and trusted of practitioners.

Lizzie Mabel Renwick Campbell was a daughter of the manse, born at Newton, her father being the late John Campbell, D.D., of Kirkcaldy, Fife. There were eight daughters, four of whom entered the medical profession. Mabel was educated at St. Andrews, where she graduated M.A. in 1906 and M.B., Ch.B. in 1909. Shortly afterwards she went to Newcastle as house-surgeon to the Eye Infirmary, thereafter joining Dr. Ethel Williams in her large practice. Not long after the last war she went into practice on her own account, and at the time of her death no doctor was better known or more beloved in a district far beyond the confines of Newcastle and its immediate vicinity. Dr. Mabel Campbell held numerous appointments, but was principally identified with the Royal Victoria Infirmary, where she was for years on the staff as one of the anaesthetists, and the Princess Mary Maternity Hospital as one of the honorary obstetric physicians. She had been a member of the British Medical Association since 1910. She acted as secretary of the Section of Obstetrics and Gynaecology at the Annual Meeting at Newcastle in 1921, and at the Glasgow Meeting in the following year was vice-president of the Section of Anaesthetics.

Professor Grey Turner writes: What we most admired in Dr. Mabel was her wonderful unselfishness and her desire to be helpful. She had the greatest regard for all that concerned the circumstances and environment of her patients and took an active interest in everything that concerned their welfare, and no one better appreciated the problems covered by those tragic words "domestic difficulties." It will never be known to what extent she acted as general adviser and friend to hosts of families in all walks of life, though it was always done unobtrusively and without the slightest idea of favours conferred. Her work for all that concerned the welfare of women and girls was most valuable. But she was also a good doctor, a healer of the sick, and had an almost uncanny appreciation of what could be done to relieve people, and it was easy to be caught out by some suggestion concerning treatment of which she had somehow become apprised while many of us were still ignorant. Her professional standing was recognized by the British Medical Association and the Women's Medical Federation, in both of which bodies she held office at one time and another. As an anaesthetist she stuck to the older methods, but in their use was an expert, and the cheery way that she approached her patients and the feeling of easy confidence which she inspired were a great help in many a difficult case. Punctuality was not her special forte, and who will ever forget her late arrival, out of breath and palpitating but absolutely unflurried, and straightway proceeding with her work as if she had been first on the scene! She loved the country and the open air, and would make extraordinary journeys at any time of day or far into the night, returning in the early morning just in time to start a day's work, telling everybody what a wonderful outing she'd made and how she wished they had been able to share her pleasure. She was unselfish and generous to a fault, and would put herself to inconvenience if she could oblige a colleague or a friend, or, better still, one of her poorer patients. Her bravery in face of her last illness was something that can never be forgotten. Dr. Mabel had the art of conciliation developed to a high degree, and her younger friends and colleagues (and not only of her own sex) naturally turned to her in their difficulties, which were always most carefully considered. Her solution was always practical and to the point, for she was a realist, but a realist with a heart of gold. She was a fine judge of character and was very shrewd in summing up any situation where the human element played a part, and never forgot that "while the world changes man is always the same."

A colleague writes: Dr. Mabel Campbell's name will always recall to those who knew her a dynamic personality and a courage which not only upheld and inspired her patients but carried her herself through a long and painful illness, which she knew from the beginning could only have one end, with a steady cheerfulness and without one single word or sign of repining or regret. She inspired everyone whose personality touched hers with some measure of her vivid courage. She was a most competent doctor, never in a hurry with patients however long-winded, however difficult it might be to get the day's work in, and always ready to listen to complaints and attend to the most trivial details. Newcastle will long remember that vivid and handsome personality with flashing eyes and a ready smile in a very ramshackle old car. Her cars were always ramshackle, probably because she was always ready to lend them to all and sundry. She was an accomplished anaesthetist and an expert obstetrician. She will be remembered at the Princess Mary Hospital and the Gables Maternity Home for her cheerful service, unsparing of herself at any hour of the day or night. The women at the welfare centres will long remember the skill and knowledge of human nature which she so freely gave them.

Medical Notes in Parliament

Parliament will probably be prorogued on November 23 and a new Session opened on November 28. During the new Session legislation will be proposed for prolonging the life of the present Parliament till after the war.

Tyneside Blood Transfusion Service

On November 7 Miss **Horsbrugh** told Mr. D. Adams that the secretary of the Tyneside Blood Transfusion Service had been informed that any necessary expenditure incurred in grouping blood donors which could not be met from voluntary sources would be reimbursed on receipt, through the hospital officer, of vouchers showing the expenditure actually incurred. Up to date vouchers had been received for only £23 19s. 2d., and this had been paid. It was estimated that an additional £225 might be required for future expenditure, and if it proved necessary to incur this, and vouchers were forwarded, the cost would be met.

Medical Attention of Unaccompanied Children

On November 7 Mr. **Groves** asked the Minister of Health what precise arrangement had been made by his Department and the British Medical Association with regard to the treatment of unaccompanied children in reception areas, in view of the fact that a letter was sent from his Department to the Medical Practitioners' Union, dated October 15, 1939, referring to the agreed terms with the Association, and another letter, also from his Department, on October 27, stating that there was no formal agreement. Miss **Horsbrugh** replied that the arrangements provided that, as from the date on which the Government evacuation scheme took effect, sums calculated at the rate of 10s. a year for each unaccompanied child would be paid to the Local Emergency Committee, and from the funds so constituted payments would be made to medical practitioners on such basis, whether capitation or attendance, as might be found convenient. The amount paid covered the cost of attendance and the provision of medicines. The Medical Practitioners' Union was informed to this effect on October 5. As the arrangements were embodied in a letter from her Department which was accepted by the Association they were rightly referred to as "agreed terms," although the agreement was not formal.

Central Medical War Committee

On November 7 Mr. **Groves** asked if the Minister of Health would consider dissolving the Central Medical War Committee, which did not enjoy the complete confidence of the medical profession, and appointing in its stead the smaller and efficient Joint Committee on Medical Questions of the Trades Union Congress, which included among its members representatives of both the Medical Practitioners' Union and the British Medical Association. Miss **Horsbrugh** replied in the negative. She said that Dr. Elliot did not think that the change proposed would be justifiable.

Dr. **Elliot** informed Mr. Groves on the same day that since the constitution of the Central Medical War Committee on the outbreak of war the full committee had met twice. Fourteen members were absent on the first occasion, and nine on the second. In addition, there had been three meetings of the executive committee and one meeting of a special subcommittee.

In reply to a further question by Mr. Groves, Dr. **Elliot** said that a number of members of the Central Medical War Committee had been appointed without reference to any connexion they might have with the British Medical Association, and some of them were, in fact, not members of the Association.

In another reply to Mr. Groves, Dr. **Elliot** said that of the 44,608 qualified medical practitioners on the *Medical Register* and resident in Great Britain or Northern Ireland, 43,650 were included in the register kept by the Central Medical War Committee. The offers of service recorded in the register were, in the case of a number of practitioners, subject to their commitments to H.M. Forces or to local authorities or other bodies by which they were employed. He could not say how many medical practitioners had permitted their names to be included in the central register without any conditions or qualifications.

The 98 per cent. of the medical profession in the register of the Central Medical War Committee was not limited to medical practitioners who had signed the British Medical Association's scheme for the protection of the practices of doctors absent on war service.

Food Rationing

The Government has decided to take steps to enable the rationing of individual consumers to be put into operation. Instructions will be given to all Food Control Committees in the United Kingdom to issue the appropriate ration book for every individual consumer. There are only two commodities—bacon and butter—which the Government considers it necessary to ration, and even in the case of these two commodities it is not proposed to begin rationing yet. The actual date will be announced later. The Government does not desire to impose the rationing of sugar, and if each consumer restricts purchases to 1 lb. per head per week there will be sufficient supplies for some months. The manufacture of margarine has been greatly increased since the outbreak of war; the quantity of cooking fats available is equal to normal. In the case of meat adequate supplies should continue to be available. Mr. W. S. Morrison, in rationing butter, will do what he can to make special provision for invalids and diabetics.

Transfer of Medical Staff to Reception Areas

Mr. **David Adams** inquired on November 9 whether instructions had been given by the Ministry on the number or proportion of medical officers who should be transferred from evacuation to reception areas. Dr. **Elliot** said evacuation authorities had been urged to assist the authorities in reception areas by the transfer of staff where the conditions in the reception areas called for additional staff. In view of the varying circumstances in such areas it would not be practicable for him to lay down definite figures.

Hospital Accommodation for Civilians

Dr. ELLIOT, who was asked by Mr. Crowder on November 9 to consider authorizing the immediate reopening of London hospitals for the treatment of civil sick on a much larger scale than at present, replied that an inquiry made by him on November 6 showed that the nine big London hospitals—the London, St. Bartholomew's, University College, Middlesex, St. Mary's, Westminster, St. Thomas's, King's College, and Guy's Hospitals—all had vacant beds available for the ordinary needs of the population. He was, however, carefully examining, in consultation with the governing bodies and their staffs, what steps were possible to increase the facilities and beds available at the central hospitals.

In a further reply on November 9 to Mrs. Adamson, Dr. ELLIOT said that in maternity hospitals, sanatoria, general hospitals, and mental hospitals in evacuation and in other areas no beds were taken over or requisitioned for casualty cases. Before the war an estimate was made of the beds which could be made available at each institution in the scheme by relying on those normally empty, by sending home convalescent patients, and by transferring others to simpler accommodation, and in many cases additional beds were supplied by the Government for use in an emergency. The returns made to him daily since the outbreak of war did not enable him to say which of the beds vacant at any institution represented existing beds freed for the reception of casualties and which additional beds supplied by the Government. In the aggregate 110,000 out of the 170,000 vacant beds in hospitals rendering returns were additional beds supplied by the Government, and 60,000 were the original beds, including those which would have been empty in any case. The additional beds were being steadily increased as hutted accommodation was completed. In the same hospitals the number of beds occupied by the sick was shown in their returns as 156,000. The vacant beds were available if necessary for the sick requiring in-patient treatment as well as for casualties. In maternity hospitals no beds had been regarded as reserved for casualties. Casualty accommodation in mental hospitals had been provided entirely by beds supplied by the Government.

In-patient Treatment at London Hospitals

On November 9 Dr. ELLIOT informed Dr. Howitt that at the beginning of the war about 8,000 hospital beds in the county of London were evacuated by sending patients either to their homes or to other institutions. In addition there were about 7,500 beds already vacant, making 15,500 in all. At the present time there were in these hospitals about 13,000 vacant beds available not only for casualties but also for the civilian sick, who were admitted to the hospitals if in need of in-patient treatment. A letter was recently sent to London hospitals on this subject.

Dr. HOWITT asked whether sufficient physicians, surgeons, and specialists had returned to London to enable hospitals to deal with the civilian population. Dr. ELLIOT replied that adequate medical and nursing personnel was available for the cases at present coming forward. He had under consideration further proposals made to him by a committee representing all sides of the profession.

Infant Welfare Centres in London

Dr. ELLIOT informed Dr. Howitt on November 9 that infant welfare centres were open in the majority of the metropolitan boroughs. The reopening of further centres was a matter in the first instance for the responsible welfare authorities, acting in the light of their knowledge of local needs and of the facilities available in their areas. Dr. Elliot added that he was aware of the importance which mothers attached to being attended by medical practitioners in whom they had confidence.

Criminal Justice Bill

Sir SAMUEL HOARE announced on November 9 that the Government had regretfully decided time could not be found for the further stages of the Criminal Justice Bill. The Bill could not be carried over to another session, but he hoped that in some early session a Bill of the same kind would be introduced and passed without delay.

Service Allowances for Children

In the House of Commons on November 14 Mr. HORE-BELISHA announced an increase in the Service allowances. He said that the rates of allowances for children, after the first child, would be: 4s. for the second child against 3s. in the past, and 3s. each for all other children instead of 2s. for the third and 1s. each for subsequent children. Payment of the increased allowances would begin in three or four weeks' time, and would be retrospective to November 13 or the nearest related pay day.

Midwives and the Emergency Hospital Service.—Dr. ELLIOT told Mrs. Adamson on November 9 that no midwives or district nurses practising as midwives had been called up for service in emergency hospitals, since they were not enrolled as such in the Civil Nursing Reserve, from which nursing staff for hospitals under the Emergency Hospital Scheme was provided. Some nurses who possessed the certificate of the Central Midwives Board had been enrolled and called up. A number of midwives had been transferred from evacuation to reception areas for service in emergency maternity homes, which, according to the returns received, were adequately staffed.

The Position of Dentists.—Mr. GROVES asked the Secretary of State for War if he was aware of the serious hardships experienced by dentists at present, and if he would consider devising a scheme by which the services of civilian dental practitioners could be utilized by the Army Dental Corps. Mr. HORE-BELISHA said that the Army Dental Corps had already absorbed a number of civilian dental surgeons, who had been appointed to commissions since the outbreak of war, and many more would be required as expansion proceeded. The arrangements for the supply of dentists both for the Services and for civilian requirements were in the hands of the Central Dental War Committee, which included representatives of the profession.

Notes in Brief

The establishment of a first-aid post includes one trained nurse. Dr. Elliot does not feel in a position to recommend the enlargement of this establishment.

Asked about treatment facilities at present available at Droitwich, Dr. Elliot stated that vigorous efforts were being made by all concerned to ensure that these facilities would continue to be available to all those in need of such treatment.

Universities and Colleges

UNIVERSITY OF SHEFFIELD

At a meeting of the University Council, held on November 10, the following appointments were made: Dr. J. B. H. Holroyd to be temporary lecturer in anaesthetics and Mr. J. Hardman to be temporary honorary lecturer in surgical anatomy, to carry on the duties respectively of Dr. R. E. Pleasance and Mr. J. C. Anderson, who are on military service; Dr. W. F. Mindham to be part-time demonstrator in anatomy for the session 1939–40; Professor H. N. Green and Professor E. J. Wayne were appointed two of the five representatives of the University on the Committee of Management of the Sheffield Hospitals Council.

The Council received and accepted with regret the resignation of Dr. Lucy Naish of the post of lecturer in osteology, and accorded its thanks to Dr. Naish for her services.

UNIVERSITY OF GLASGOW

At a ceremony of graduation on November 11 the degree of M.D. (with commendation) was conferred on P. K. Fraser (*in absentia*).

ROYAL COLLEGE OF SURGEONS OF ENGLAND

An ordinary meeting of the Council was held on November 9 with Mr. Hugh Lett, the President, in the chair. Mr. R. St. Leger Brockman of Sheffield was readmitted to the Court of

Examiners for a period of five years. The scientific report of the College for the year 1938-9 was approved and adopted.

Final Fellowship Examination

The Council decided to hold an additional Final Fellowship Examination in February, 1940. The Council recognizes that it may be difficult for some candidates to comply with the regulations for admission to the Final Fellowship Examination. It has been resolved therefore that those candidates who because of war work have been unable to comply with the regulation that requires six months' residence as house-surgeon in a recognized hospital may apply to the President, through the Director of Examinations, for special permission to enter for the examination. With his application a candidate must submit a certificate from his commanding officer giving (*a*) particulars of his appointment in the Navy, Army, or Air Force, (*b*) the dates of his service with the unit, and (*c*) an indication of the nature of the duties performed by him during such service. A candidate in the Emergency Medical Service or in a civil hospital should furnish similar particulars signed by the senior surgeon of the hospital in which he may have held the appointment.

Licence in Dental Surgery

Sundry alterations in the regulations for the Licence in Dental Surgery were agreed to. Details of the alterations have been sent to the medical and dental schools. Provisional recognition was granted to the Dental Faculty of the Punjab University so that graduates of the Faculty may be admitted to the Final Examination for the Licence in Dental Surgery on completing six months' general medical and surgical hospital practice in this country.

Grant of Diplomas

Diplomas of Membership were granted to the 297 candidates whose names were printed in the report of the meeting of the Royal College of Physicians of London published in the *Journal* of November 4 (p. 930), and to P. J. Crowley, A. M. Goldthorpe, Joyce S. Miller, and Aileen E. M. Whetnall.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At a quarterly meeting of the Royal College of Physicians of Edinburgh, held on November 7, with Dr. Alexander Goodall, President, in the chair, Drs. David Dowie Dunn (Capetown), Jiwan Ram Maleri (Punjab), Beatrice Annie Sybil Russell (Gold Coast), George Robertson McNab (Birmingham), Philip Wolfe McKeag (Bath), Robert Patrick Anderson Macaulay (Trentham), and Harry Winton Dryerre (Edinburgh) were elected Fellows of the College.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At the annual meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, held on November 6, the following officers were elected for the ensuing year: *President*, Dr. J. Souttar McKendrick; *Visitor*, Mr. Roy F. Young; *Honorary Treasurer*, Mr. William J. Richard; *Honorary Librarian*, Dr. W. R. Snodgrass; *Representative on General Medical Council*, Mr. G. H. Edington.

Medical News

The B.B.C. announces that on November 23 at 4.15 p.m., in the series "Talking it Over," a medical psychologist will discuss "States of Mind"; and that "physical exercise" broadcasts will be inaugurated on December 4, starting at 7.35 a.m.

It has been decided that the annual course of lectures and practical instruction for a Diploma in Psychological Medicine held at the Maudsley Hospital, Denmark Hill, S.E.5 (London County Council and University of London), will begin as usual on January 1, 1940. War conditions call for some changes in arrangements, but the clinical instruction necessary to satisfy the requirements of the various examining bodies will be provided. A notice of the course will appear later in the advertisement columns of this *Journal*. Inquiries should be addressed to the Honorary Director of the Medical School, The Central Pathological Laboratory, West Park Hospital, Epsom, Surrey.

The Copley Medal of the Royal Society has been awarded to Professor T. H. Morgan of the California Institute of Technology for his establishment of the modern science of genetics; and the Davy Medal to Professor J. W. McBain of Stanford University, California, for distinguished work in the study of colloidal electrolytes. A Royal Medal has been awarded to Professor D. Keilin, F.R.S., for his contributions to biochemistry and entomology; in particular for his demonstration of the part played by cytochrome in the oxidation-reduction mechanisms of the living cell; and for his studies of the higher Diptera.

Among four recipients of gold keys from the American Congress of Physical Therapy for distinguished research in physical therapy during the last year is Dr. J. B. Mennell of London. The award was made during the same month that Dr. Mennell took up his duties as president of the Section of Physical Medicine of the Royal Society of Medicine. This is the fourth occasion on which one of these keys has been awarded to a medical practitioner in this country; the last was to Sir Henry Gauvain in 1936.

The Institute for the Scientific Treatment of Delinquency announces that it has now been found practicable to reopen the clinic at 8, Portman Street, W.1, and applications may be made either by letter or telephone to the secretary. For the present the work of the clinic will be restricted to diagnosis and advice (including social work and disposal), but the directors are endeavouring to arrange for psychological treatment to be given in Central London. Arrangements are also being made for diagnosis and treatment in certain districts outside London.

The issue of *Nederlandsch Tijdschrift voor Geneeskunde*, the organ of the Dutch Medical Association, for October 21 contains a sympathetic obituary notice of Dr. Harvey Cushing by Dr. P. Brouwer, professor of neurology at Amsterdam, and two portraits, one in his study and the other in a group of Dutch peasants at Amsterdam.

The October issue of the *Psychiatric Quarterly* is dedicated to Dr. Robert Hutchings, who has retired after forty-seven years' service to New York State, and for the last four years has been editor of the journal.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

There has been a tendency in recent weeks for the incidence of diphtheria to increase, but in none of the localities affected have outbreaks attained epidemic proportions. In England and Wales notifications in the last four weeks were: 952, 941, 975, and 1,002 (week under review), and there has been a corresponding rise in the number of deaths from diphtheria; but the numbers notified each week have been below those recorded in the corresponding week of 1938. On the other hand, the number of deaths certified has in the last few weeks approached that for last year, suggesting that the disease is present in a more severe form. In Scotland and Ireland considerable fluctuations in diphtheria prevalence have been observed during the same period and no definite trend is discernible. Similarly, notifications of scarlet fever have varied from week to week—in England and Wales as well as in Scotland and Ireland. The usual seasonal trend has probably been disturbed by the abnormal distribution of many of the susceptibles and the varying conditions in different localities as regards reopening of schools.

The figures for pneumonia (primary and influenzal) in England and Wales have in the last four weeks increased irregularly, and there has been a steady rise in the deaths from influenza, although the numbers are still low.

The abnormal prevalence of dysentery in Scotland, principally affecting Edinburgh, continues. Notifications for the whole country were 52, compared with 39 in the previous week and 23 in the corresponding week last year. Of the 52 cases notified, 22 were in Edinburgh, 5 in Dundee, 4 in Glasgow, and 3 in Aberdeen.

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INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended October 28, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	25	1	6	1	—	19	2	4	1	2
Deaths		—	—		1		—	—		
Diphtheria	1,002	40	205	50	43	1,432	153	274	81	26
Deaths	26	1	6	2	2	27	5	3	5	—
Dysentery	47	3	52		—	39	23	23		—
Deaths			2	—	—			—	—	—
Encephalitis lethargica, acute	2	—	—	1	—	2	—	—	1	—
Deaths		—	1				—	1		
Enteric (typhoid and paratyphoid) fever ..	32	1	4	9	2	19	1	7	3	3
Deaths	3	—	—	—	—	—	1	1	—	—
Erysipelas			79	10	4			81	3	7
Deaths		—	2		1		2	—		
Infective enteritis or diarrhoea under 2 years ..										
Deaths	34	2	17	7	2	45	10	9	11	2
Measles			6		18		22	8		2
Deaths	1	—	—	—	—	1	—	—	—	—
Ophthalmia neonatorum	73	4	22		2	87	9	35		—
Deaths										
Pneumonia, influenzal*	543	36	3	1	1	578	65	11	2	19
Deaths (from influenza)	28	2	2	—	—	22	4	1	—	1
Pneumonia, primary			139	9				229	9	
Deaths		7		10	3		14		11	6
Polio-encephalitis, acute	6	—				4	1			
Deaths		—					—			
Poliomyelitis, acute	21	1	—	—	—	70	4	3	1	—
Deaths		—	—				1	1		
Puerperal fever	1	1	9	4	—	3	3	19	2	—
Deaths		—					1†			
Puerperal pyrexia	137	4	29		3	183	17	31		—
Deaths										
Relapsing fever	—	—			—	1	—			—
Deaths										
Scarlet fever	1,336	19	237	61	99	2,000	192	411	92	93
Deaths	3	—	1	—	—	2	1	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough			11		1		146	178		9
Deaths	3	—	—	—	—	5	—	2	—	1
Deaths (0-1 year)	274	23	66	29	13	258	35	45	32	13
Infant mortality rate (per 1,000 live births) ..						43	29			
Deaths (excluding stillbirths)	4,639	725	681	173	139	4,226	834	556	178	121
Annual death rate (per 1,000 persons living) ..			13.8	11.6	12.2	10.4	10.6	11.3	12.1	10.7
Live births	5,520	637	905	373	235	6,247	1,116	828	343	228
Annual rate per 1,000 persons living ..			18.3	25.1	20.6	15.3	14.2	16.9	23.2	20.2
Stillbirths	238	18	39			250	31			
Rate per 1,000 total births (including stillborn)			41			38	27			

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Death from puerperal sepsis.

Letters, Notes, and Answers

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QUERIES AND ANSWERS

Parotid Swelling in an Infant

Dr. COLIN H. HARPER (Kenilworth) asks if any reader has met a case similar to that recorded below and can offer a prognosis: The patient is a female infant, born September 1, 1939, who has had for the past five weeks a painless parotid swelling on the left side which refuses to resolve or alter in any way. The tumour is soft but does not fluctuate, and the overlying skin is normal. The child was full-term and a breech birth, and was quite healthy for the first fourteen days, at which time she developed an extensive white mouth. The mouth condition cleared up with coll. argentum after a week and was followed by the parotid swelling. The baby is making good progress on artificial feeding and is otherwise quite normal.

Foot Powder for Soldiers in Rubber Boots

"REGISTERED MEDICAL AUXILIARY" writes: In many cases those serving in the Army are required to wear rubber Wellingtons for several hours daily, and in some instances with deleterious effect, such as skin surface sensitiveness, congestion, liability to blister, etc. Sponging with methylated spirit is often advised with advantage after a footbath in which potassium permanganate is used. An authoritative pronouncement in regard to a suitable astringent powder, which could be dusted into the socks for use while wearing these rubbers, would be of great service to those who are anxious to help the feet of our soldiers.

Fractured Femur in the Field

"D. W." writes in reply to Dr. W. R. Wilson's inquiry (October 28, p. 896) regarding a method of treating fractured femurs in the field. This method was fully described (and illustrated) in a paper on field ambulance training which appeared in the *Journal of the Royal Army Medical Corps* of March, 1939. The writer (Major J. B. Fotheringham) stated that his attention was first drawn to this method in the last war by a brother officer who produced a cutting from a medical journal. This must have been Captain Chavasse's description in the *British Medical Journal* referred to by your correspondent. After this it was used in the field ambulance with which the writer was serving. He has taught the method in peace time. I myself while a Territorial D.A.D.M.S. introduced the method into the field ambulances of my division. Dr. Wilson states that extension is maintained by means of a strap passed between the legs and fastened to the head end of the stretcher. It is better (and more comfortable for the patient) to maintain extension from the shoulders. A triangular bandage is tied in a half-knot round each shoulder-joint over a pad in the axilla and the ends are fastened to the handle of the stretcher on the opposite side.

Income Tax

Deduction of Tax from Interest

"H. P." explains that he has a mortgage on some property, the interest being payable on April 1 and October 1. He has recently received the interest less tax at 8s. 6d. in the £. Is this correct?

⁂ No. The interest being secured on property is presumably "payable out of profits and gains brought into charge," and tax is deductible at the rate in force for the year in which it falls due. If the interest had been payable on April 6, etc., the rate for the year would be 7s. in the £, and as 5s. 6d. only was deducted in April 8s. 6d. would now be deductible to produce an average of 7s. But the April interest was taxable at last year's rate—that is, 5s. 6d.—and not at 7s., and therefore no special adjustment can properly be made from the October payment, which is taxable at 7s. only.

LETTERS, NOTES, ETC.

Safely Swallowed Safety-pin

Dr. D. S. BRYAN-BROWN (London, N.16) writes: On October 18 I was called to see a boy 23 months of age who for three days had refused to eat. His temperature was subnormal. There were signs of erupting molars and his submaxillary lymphatic glands were palpable. The tonsils were within normal limits. The parents were reassured. On October 26 I was sent for in a hurry as the child had passed a 1½-inch open safety-pin. The child is perfectly well and has remained so up till now. It seems remarkable that a sharp-pointed foreign body of this size should pass through the alimentary canal of such a small child with impunity.

Accommodation for Medical Boards

"MEDICO" writes: May I, as a member of one of the Military Service Act medical boards in London, draw attention to the unhealthy conditions under which the members of some of these boards are expected to work. Surely there should be plenty of suitable premises such as hotels and other buildings available for the purpose. As it is, a converted shop with practically no ventilation, no running water for washing or testing urine, and a stifling temperature often over 70° is the accommodation set aside for some boards. To ask medical men and other staff to work under such conditions is surely not fair and is uneconomical, because in an influenza epidemic most of the staff would be down sick. I hope that all premises will be surveyed with a view to their alteration or transference of the work to more suitable buildings.

Information for the Deaf

The National Institute for the Deaf (105, Gower Street, W.C.1) has issued a handbook entitled *All about the Deaf* (price 3s.; 3s. 3d. post free), which describes how the deaf are helped and how they may help themselves. It was first published in 1929 as *The Problem of the Deaf.* This volume of 125 pages gives trustworthy information on every aspect of deafness, and should be of great service to all those concerned with this subject. The two classes of patients whose interests are considered in the book are the "deaf and dumb" and the "deafened"—that is, those who were not born deaf but have acquired their hearing defect at some time since birth. The book includes articles on the legal aspects of deafness, the certification of mental defect in the deaf, the prevention of deafness, the education of the deaf and dumb, the use of hearing aids, and schools for the deaf; it also reminds the reader that the National Institute for the Deaf maintains a list of firms which have agreed to certain conditions in the sale of hearing aids to the public. Among much other valuable information there is also a list of hospitals in Great Britain where diseases of the ear, nose, and throat may be treated. The National Institute for the Deaf, in conjunction with the Department of Industrial Physiology of the London School of Hygiene and Tropical Medicine, has also issued a valuable report on *Employment of the Deaf in the United Kingdom,* by Miss M. L. Clark and Dr. G. P. Crowden.

"Foreign Pharmaceutical Products"

Messrs. COATES AND COOPER, Ltd., Clerkenwell Road, E.C.1, write: We note that in your issue dated October 28 you have incorporated under the heading "Foreign Pharmaceutical Products" the preparation idozan. We would like to draw attention to the fact that idozan has been manufactured in this country for some considerable time, and in October, 1938, a half-page advertisement to this effect appeared in your *Journal.*

BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 25 1939

CLASSIFICATION OF NON-INFECTIVE ENLARGEMENT OF LYMPH NODES*

BY

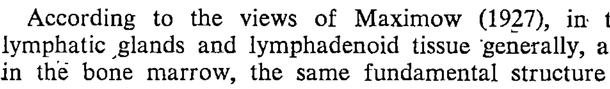
JOAN M. ROSS, M.D.
Reader in Pathology, University of London

In dealing with the "non-infective" enlargement of the lymph nodes it is necessary that uniformity of description and terminology should be arrived at by all pathologists on whom the onus of biopsy diagnosis rests. The reaction of various conditions to therapeutic measures cannot be pronounced with certainty until we are sure that similar conditions are being compared, nor can any prognosis be made until a considerable number of adequately diagnosed and classified conditions have been treated and the results assessed. In this paper a classification is put forward based on the cytology of the lymph gland, and the clinical conditions represented by the various groups are summarized so far as they are at present established.

Structure of Lymph Glands

According to the views of Maximow (1927), in the lymphatic glands and lymphadenoid tissue generally, and in the bone marrow, the same fundamental structure is present. This consists of a framework of argyrophil recticulin fibrils, closely associated with which is an undifferentiated syncytium. In the meshes are located the immature and maturing free cells of the blood. The undifferentiated syncytium is mesenchymal in its nature and is capable of differentiating along various lines (Table I).

TABLE I



The reticular syncytium does not perform any metabolic function, is not phagocytic in character, and does not store vital dyes. Under stimulation, reticulum cells are formed from the reticular syncytium. These are large oval or stellate cells, with an oval vesicular nucleus; a well-defined nucleolus is present. They still possess unrestricted potentialities for differentiation, and may be phagocytic and store vital dyes. Similar cells are found in connective tissues near the blood vessels.

The venous sinuses of the splenic pulp and bone marrow, and the lymphatic sinuses in the lymph glands, are lined by specially differentiated reticulum cells (sinus reticulum, or littoral cells). The stellate cells of von Kupffer in the liver are of this nature. Littoral cells are phagocytic in character and, under stimulation, differentiate to the actively phagocytic free histiocytes.

In the bone marrow the undifferentiated tissue gives rise at first to a primitive free cell, which was called the haemocytoblast by Ferrata. This cell may differentiate along various lines—to the monocyte, the myelocyte, the erythroblast, or the megakaryocyte. Maximow regards the haemocytoblast as similar in every way to the large lymphocyte of the lymphatic tissue—that is, the lymphoblast. This large lymphocyte (lymphoblast) arises normally from the reticulum cells in the lymphatic tissue. It does not enter the blood. It gives rise to the medium-sized lymphocyte, and that in turn, by mitosis, gives rise to the small lymphocyte. The medium-sized lymphocyte of the lymphatic tissue is the large lymphocyte of the peripheral blood stream. The plasma cell arises by alteration of the lymphocyte.

Another line of differentiation which has its origin through the reticulum cell results in the formation of the fibrocyte, and collagen fibres are thus produced. Normally reticulin fibres are produced by the reticular syncytium and its derivatives. Under pathological conditions a somewhat specialized reticulin-forming cell, the dictyocyte, becomes recognizable. It is a polygonal cell with cytoplasmic projections, which may be in contact with projections from adjacent cells. It is specially important in the discussion of the neoplasms of the lymph nodes.

The point which I wish to emphasize is this: There is, in the haemopoietic tissue and elsewhere, a common ancestral or stem-cell type which, given appropriate stimulus, may differentiate along any of the lines of development shown in the table. The appropriate stimulus, in a normal human adult, for the development of the myelocyte is present in the bone marrow; the appropriate stimulus for the development of the small lymphocyte is present in the lymphadenoid tissue. Under abnormal conditions there may be action of such stimulus in abnormal situations; or an abnormal stimulus may cause overproduction of any of the cell types, or abnormal combinations of cell types. This means that the tissue changes, in myeloid and lymphatic leukaemia, for instance, are not due to a fundamental difference in two tissue elements, but to the action of a different stimulus on a common

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* Read in opening a discussion in the Section of Pathology and Bacteriology at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

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stem-cell. In the normal adult tissue of a human the development of this stem-cell into free blood cells rarely happens, except, possibly, in lymphatic tissue. This development does, however, become apparent in certain diseases.

Before going on to the classification of the diseases of the lymph glands, it remains to summarize the occurrence of these tissue elements in the lymph nodes. The reticulin fibrils in the medulla of the lymph node form a meshwork which supports the undifferentiated syncytium. The derivatives of the syncytium—reticulum cells, lymphocytes of all sizes, and histiocytes—lie in the meshes. At the margin of sinuses there is some condensation of these reticulin fibrils, and some cross the lumen of the sinus and are continuous with the capsule. These fibres serve as a support for the littoral cells. The follicles contain few reticulin fibrils, if any, the reticular syncytium acting as a supporting stroma for the large, medium, and small lymphocytes.

Classification

The non-infective enlargements of the lymph nodes are essentially hyperplasias, or neoplasms, of the reticulum or its derivative cells. The term "reticulosis" should be used for those diseases in which there is systematized hyperplasia of differentiated or undifferentiated mesenchymal cells, leading to generalized enlargement of the lymph nodes, the spleen, and the liver, with alteration of the bone marrow. This idea of cytological classification is an old one. MacCallum in his textbook gives it as his opinion that "if we knew accurately all the cellular types existent in the bone marrow and in the lymphoid tissue, and assumed that each is capable of undergoing independent hyperplasia, we should be able to tabulate all the possible diseases arising in this way." The recently acquired knowledge of the existence of the undifferentiated mesenchymal cell and its capacity for differentiation enables us to go a long way further in classification.

We may now assume that the unknown factor stimulating hyperplasia of any cell elements does not necessarily inhibit differentiation of that cell, although it may be regarded as determining the line or lines of differentiation which the hyperplastic cell may follow. The classification now proposed assumes that any one of the unknown aetiological factors will act on medulla or follicle or sinus, since such special site of action has been established for the known aetiological agents producing changes in the lymphatic glands (syphilis, etc.).

TABLE II.—*Non-infective Enlargements of Lymph Nodes*

(1) Reticulosis—hyperplasia of differentiated or undifferentiated mesenchyma
  A: Medullary reticulosis:
    (i) Primary:
      (*a*) Undifferentiated. (*b*) Haemic (leukaemias). (*c*) Fibromyeloid (lymphadenoma). (*d*) Histiocytic.
    (ii) Metabolic; generalized lipoidosis:
      (*a*) Gaucher's disease. (*b*) Niemann-Pick disease. (*c*) Primary xanthomatosis.
  B: Follicular reticulosis:
      (*a*) Lymphoid. (*b*) Fibrillary.
  C: Sinus reticulosis:
      (*a*) Acute. (*b*) Chronic.
(2) Primary neoplasms—reticulosarcoma

In medullary reticulosis the proliferating cells arise in the medulla of the lymph gland, spleen, and bone marrow. In follicular reticulosis the follicles of the lymph gland are affected and the proliferating cells have a follicular arrangement. In sinus reticulosis hyperplasia affects the littoral cells lining the lymphatic sinuses of the lymph glands and the venous sinuses of the liver, spleen, and bone marrow. Subdivisions can then be made in these groups according to the types of cells produced. Some of the groups given in Table II can be further subdivided. For instance, the haemic medullary reticuloses are the leukaemias (or leucoses), myeloid or lymphatic or monocytic. Possibly, according to some opinions, the more accurate position for monocytic leukaemia would be in the sinus reticulosis group; this is a matter on which more knowledge is badly needed.

Having outlined the classification of the diseases affecting the haemopoietic organs, it remains to provide a clinical picture of each type and briefly to indicate the changes found in the lymph nodes.

Undifferentiated Medullary Reticulosis

It may be taken as a rule that where there is little differentiation of the primitive cells the clinical picture is an acute one. This type of reticulosis is an acute disease affecting children. The course averages about six weeks. The symptoms are typhoid-like. There is generalized enlargement of the lymph glands, splenomegaly, and hepatomegaly. The intestinal lymphoid tissue may be affected. The predominating cell in the enlarged gland is the reticulum cell. Sometimes fibrils are formed, but phagocytosis is not present. Roussy and Oberling (1934) described about sixteen cases. A similar disease occurs in adults, but is very rare. In adults the course tends to be subacute.

Haemic Medullary Reticulosis

This group includes the myeloid, lymphocytic, and monocytic leukaemias, or leucoses. Chronic and acute myeloid leukaemia need not detain us. In myeloid leucoses the hyperplasia seems to affect cells which have already become differentiated and can only differentiate to more adult members of the granulocyte series. As a rule, in this condition there is no evidence of any reticular hyperplasia in the lymphatic gland. In lymphatic leukaemia there is, however, evidence in nearly all cases of hyperplasia of cells without a fixed line of differentiation—that is, hyperplasia of the reticulum cells. The following case illustrates this in a most striking degree. In other cases lesser degrees have always been found on careful examination of the lymph glands.

CASE I

This patient, a man aged 57, was admitted to hospital with a history of enlarged glands of the neck, axillae, and groins for three years, necessitating periodic rests from work. Two and a half years before admission a white blood count showed 60,400 cells, with 92 per cent. of lymphocytes; a gland removed at biopsy was said to be typical of lymphatic leukaemia. On admission the white cells of the peripheral blood stream were all of a primitive type—oxidase-negative non-granular cells (see Table III). There was pleural effusion, and the liver and spleen were enlarged. Later, after prolonged *x*-ray treatment, the cells were for the most part small lymphocytes. At necropsy the mediastinal, cervical, abdominal, and inguinal glands were all enlarged. The liver was large, weighing 2,041 grammes. The spleen weighed 1,415 grammes, and showed very large grey Malpighian bodies in a reddish pulp. Microscopically, adult lymphocytes were present in the pulp. The Malpighian bodies were normal but large. Microscopically, some glands were packed with small lymphocytes, with obliteration of the normal architecture; others showed reticulum hyperplasia with development of fibre-bearing cells, and giant cells with twin mirror-image nuclei were present. One of the points of interest in this case is that before the post-mortem histological examination there was no reason to suspect that the blood count, so typical of lymphatic leukaemia, did not give an accurate indication of the underlying tissue changes.

TABLE III

1936	R.B.C. (1,000's)	Hb %	W.B.C.	P.	Degen. Cells	Primitive Oxid. neg.	Lymph.
Feb. 15	3,200	52	700,000	0.5	36.0	63.5	—
„ 26	3,100	52	438,000	3.0	36.5	60.5	—
„ 27	3,260	54	500,000	2.0	40.5	57.5	—
Mar. 3	3,250	52	408,000	1.0	46.0	53.0	—
„ 6	3,080	56	345,000	2.0	27.0	66.0	8.0
„ 9	3,030	54	286,000	2.0	35.0	53.0	10.0
„ 12	3,340	54	260,000	3.5	—	12.5	83.5
„ 17	3,500	58	238,000	4.0	3.0	2.5	89.5
„ 19	3,270	58	225,000	3.0	2.0	2.0	93.0

Treatment: Deep *x*-ray to spleen and chest. Frequent paracentesis.

There is some confusion in the literature of monocytic leukaemia as to the histological changes in the lymph gland and other organs, and at the present time it is not possible to formulate any opinion as to the true position of this disease. I have no personal experience of a true monocytic leukaemia. In a case of acute leukaemia with 10,500 white blood corpuscles per c.mm. 32 per cent. by vital staining were true monocytes and 41 per cent. small lymphocytes. The sternal puncture showed adult small lymphocytes. The case was diagnosed as acute mixed leukaemia, and the lymph glands showed hyperplasia of the sinus reticulum as well as medullary hyperplasia.

Fibromyeloid Medullary Reticulosis

This is the correct term in the suggested classification for that disease so long known as lymphadenoma or Hodgkin's disease. It is the best known of the primary reticuloses except those of the haemic group, and the clinical picture is well defined. The course is chronic. It is longer in duration than other reticuloses, with the possible exception of follicular reticulosis and Gaucher's disease. The lymph nodes in the cervical region are affected first as a rule, and the enlargement then spreads to the other groups. Splenomegaly occurs in about 70 per cent. of the cases; it is moderate and not constant. Massive involvement of the lung may occur in some cases.

The characteristic changes in the glands in fibromyeloid reticulosis are the proliferation and differentiation of the reticular syncytium. These changes have been described in great detail by Pullinger. The changes in the reticular syncytium and the cells derived from it may be summarized as follows:

> The nucleus becomes enlarged and the cytoplasm becomes partially separated. The swollen cells then separate out as individuals. The cells may show vacuolation and retraction of the cytoplasmic processes, and groups of cells may be seen showing ill-defined cell boundaries with large nuclei, perhaps twin. Cells appear with well-defined twin nuclei, which in characteristic Sternberg-Read giant cells are mirror images of one another. These giant cells are often seen in Hodgkin's disease.

The characteristic of lymphadenoma is, however, differentiation of the cells; a filigree of reticulin fibrils is present, and granular cells, many of them eosinophils, are developed from the reticulum cells, a considerable diversity of cell structure resulting. In late stages the production of collagen may give rise to a very dense fibrous tissue with only a few reticulum cells remaining.

Histiocytic Medullary Reticulosis

Histiocytic medullary reticulosis is a condition which has probably been classified as "atypical Hodgkin's disease." Pullinger described a case in 1932. The glandular lesion was characterized by areas of haemorrhage and necrosis. Macrophages were present, with chromatin particles and, frequently, red blood corpuscles in their cytoplasm. Giant cells having small nuclei arranged at the periphery were also present. Occasionally reticulum cells with twin nuclei were seen. Cells with eosinophilic cytoplasm and darkly staining nuclei were abundant. Some of these showed mitotic figures. (These cells have been termed prohistiocytes by Robb-Smith, 1938.) Bodley Scott and Robb-Smith (1936) have included this case with three others in a paper on histiocytic medullary reticulosis. These authors have been able to find six other cases in the literature and to assign a clinical picture to the condition. Briefly, the clinical course is characterized by fever, wasting, generalized glandular enlargement, splenomegaly, and hepatic enlargement. Jaundice, purpura, and anaemia with leucopenia are common in the final stages. The average duration of the disease is fifteen weeks, all cases ending fatally.

Generalized Lipoid Histiocytosis

Gaucher's disease is familial, the average duration being about forty-five years. The condition is characterized by great splenic enlargement, and although there may be generalized enlargement of the glands it would be unusual for diagnosis to rest on the biopsy of a gland. It is not always realized that patients suffering from Gaucher's disease may live for "three-score years and ten" and die of the cerebral complication of athero-sclerosis so common to the old without the metabolic disturbance being of clinical significance.

Follicular Reticulosis

Follicular reticulosis of the lymphoid type has been described by Brill, Baehr, and Rosenthal (1925) in America as follicular lymphoblastoma. It is a disease affecting adults, the average age being from 43 onwards. The course is typically remittent, lasting for four or five years. There is splenomegaly and enlargement of the lymph glands. The disease is characterized by serous effusion, and hypochromic anaemia is fairly constant. The clinical picture in some cases is that of hepatic cirrhosis with splenomegaly. Other cases, however, give the clinical picture of "splenic anaemia" with leucopenia and relative lymphocytosis. The lymph glands show on the cut surface numerous small white nodules. These are enlarged follicles, consisting of large lymphocytes. There is no reticulin increase, and occasional reticulum cells are present. In all about forty-five cases of the disease have been described. The American writers state that the condition responds well to irradiation.

CASE II

This case was diagnosed in life as reticulosis. The patient, a woman aged 58, was admitted for swelling in the abdomen. There was a ten-weeks' history of listlessness, dyspnoea on exertion, and swelling of the ankles. For six weeks there was enlargement of the abdomen with ascites, which was tapped, and at the onset constipation was present. She was admitted on May 24, 1938, and died on June 22, being under observation for four weeks. On admission the spleen was down to the umbilicus and the liver palpable. Glands were palpable in the axillae and groins. Paracentesis was performed on two occasions, 16 pints and 18½ pints of milky fluid being withdrawn. This was sterile and contained no fat. A blood

count showed: red cells, 5,160,000 per c.mm.; haemoglobin, 92 per cent.; white cells, 6,600 per c.mm.—75 per cent. polymorphs, 0.5 per cent. basophils, 0.5 per cent. eosinophils, 22 per cent. lymphocytes, 4 per cent. monocytes.

Post-mortem Examination.—There was oedema of the larynx, and ten pints or more of turbid fluid were present in the left pleural cavity. The lungs were collapsed at the base; the abdomen contained twenty pints or upwards of turbid fluid; the liver weighed 2,280 grammes and was firm and pale. The spleen weighed 1,120 grammes, was 22 cm. long, was dull pink with a thick capsule, and its cut surface was studded with white nodules. The lymph glands were all enlarged, were white, soft, and discrete, and numerous punctate white areas were present on the cut surface. The bone marrow showed similar small white nodules. Microscopical changes in the lymph nodes were recorded thus: "The white areas are the lymphoid follicles much enlarged. They consist of large lymphocytes, with occasional reticulum cells. There is no increase of reticulin fibrils in the follicles." This case was similar in many ways to one described by me in 1933.

CASE III

This patient, a Post Office worker, was under observation for five years. The onset of disease, with swelling of the glands in the groin, occurred when he was 43; later the glands in the axilla became enlarged. At the age of 47 he was admitted to hospital. He then had dental sepsis with ulceration of palate. The Wassermann reaction was negative. There was proptosis of the left eye, and enlarged glands were present about the left orbit and in the left cervical region. A biopsy on one of the cervical glands at this time showed follicular lymphoid reticulosis, with follicles consisting almost entirely of adult small lymphocytes. These glands disappeared under *x*-ray treatment. A blood count showed: 3,930,000 red cells per c.mm.; 68 per cent. haemoglobin; and 4,200 leucocytes, 74 per cent. being polymorphs, 2 per cent. basophils, 1 per cent. eosinophils, 4 per cent. monocytes, and 19 per cent. small lymphocytes. There was a recurrent enlargement of glands for a period of three years. As new groups of glands became enlarged and interfered with his work, *x*-ray treatment was given, the enlargement then subsiding. Three months before death he was admitted with generalized glandular enlargement and a cough. Death resulted from confluent bronchopneumonia with empyema.

Necropsy.—There was generalized enlargement of the lymph glands, and also a mass in the abdomen pressing on the right renal pelvis, causing hydronephrosis. The spleen was large, with a normal pattern. The glands showed small white nodules studded over the cut surface. Microscopically the glands revealed lymphoid follicular reticulosis, and in some of them there were adult and small lymphocytes in the follicles, as had been found in the biopsy material two years previously. In the mass in the abdomen the follicles consisted of large lymphocytes, and reticulum cells were also present. The feature of this case was the extraordinary sensitivity to *x* rays, whereby the disease was checked but not arrested. This was like a case of lymphadenoma, in that the one group of glands enlarged first, and the enlargement then took place in another group. The glandular enlargement was not generalized from the onset.

I believe that similar cases have in the past been regarded as radiosensitive Hodgkin's disease, and that this type of lymphoid follicular reticulosis in a clear-cut clinical entity.

Fibrillary Follicular Reticulosis

This disease is similar to lymphoid follicular reticulosis, but is evidently more rare. It occurs in adults. I described a case in a woman of 61 who was admitted to hospital with a diagnosis of hepatic cirrhosis with splenomegaly and generalized glandular enlargement. There had been recurrent ascites for eighteen months. The blood count was: red cells, 3,770,000; haemoglobin, 50 per cent.; leucocytes, 6,000, 47 per cent. being polymorphs, 5 per cent. monocytes, and 48 per cent. lymphocytes. The lymphatic glands, on naked-eye examination, showed numerous small white nodules. Microscopically these white nodules consisted of irregularly shaped reticulum cells with occasional binucleate forms. A great increase in reticulin fibrils was present in these follicles.

Primary Sinus Reticulosis

This group includes hyperplasia of sinus-lining or littoral cells. An acute type, running a clinical course of great rapidity, with jaundice and increasing anaemia, has been described by Debenedetti and Florentin (1931). It affects adults. The spleen and liver are enlarged, and in the lymphatic glands and elsewhere there is phagocytosis of the red blood corpuscles by the proliferating sinus-lining reticulum cells. Pryce and Reburn have described a similar case in this country.

There was also a chronic type which was originally described as occurring in the spleen (Stengel; Wolbach, 1911). When the lymph glands are affected the normal architecture of the gland is entirely destroyed: circular foci of cellular proliferation surrounded by a zone of peripheral fibrous tissue are scattered throughout the whole gland. The centre of each focus consists of proliferating cells of the histiocyte type, usually with one or more giant cells of the Langhans type. Occasionally the giant cells contain cytoplasmic inclusions. Necrosis has never been observed. Reticulin fibrils and collagen fibrils run in between the cells, as well as encircling the nodules, and fibrosis of the entire nodule results. The aetiology is quite unknown.

Conclusion

This concludes my survey of some of the conditions in which reticular hyperplasia is the underlying tissue change. I hope I have made it clear that well-defined clinical entities are represented by some of the groups into which the conditions have been classified. Cases of lymphadenoma, or Hodgkin's disease, lymphoid follicular reticulosis, myeloid leukaemia, histiocytic medullary reticulosis, Gaucher's disease, and some others fall into their correct position when the tissue changes in a lymph gland are subjected to careful analysis, and the clinical characteristics of other groups should be recognized as our knowledge of the reticular hyperplasias increases. The future should enable us to assign most conditions to their correct classes, but meanwhile the careful examination of lymph gland and bone marrow (preferably before treatment is begun) must take a prominent position in the diagnostic investigation of all cases.

It must be remembered that the ultimate object of classification is (1) to assist in the search for an aetiological factor, and (2) to provide a basis for information as to prognosis and the result of treatment. No real advance can be made until a definite cytological examination is carried out before treatment is begun.

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THE VALUE OF THERAPEUTIC MEASURES IN DUODENAL ULCERATION

BY

JAMES RONALD, M.D., M.R.C.P.Ed.
Junior Assistant Physician, Victoria Infirmary, Glasgow

The number of methods recommended for the treatment of peptic ulcer is in itself an indication that there is no specific therapeutic measure for this condition. Treatment, however, whether medical or surgical, is designed to diminish the hyperchlorhydria which is almost always present. To achieve this end elaborate dietetic systems have been evolved, among which may be instanced the Sippy and Lenhartz regimes and their many modifications. Considerable claims have been made for all these methods, and much success has accompanied their use, but none of them has given invariably successful results. It has indeed been questioned whether equally good results may not be achieved without these meticulous dietetic and medical measures, simply by putting the patient to bed and feeding him at regular intervals with a bland light diet. Diminished gastric acidity has often been regarded as an essential to symptomatic improvement and as an important factor in the healing of peptic ulcers, but it has nevertheless been noted (Moore, 1938) that hyperchlorhydria may remain or may even become more intense while healing is taking place, with symptoms in abeyance.

It has thus seemed worth while to attempt to determine: (*a*) whether it is possible to control a severe degree of hyperchlorhydria throughout the day by the methods commonly adopted, and (*b*) whether such control, if attainable, is an essential to symptomatic improvement and to the healing of the ulcer. With a view to determining these points, sixty persons were investigated, fifteen of whom were healthy control subjects, free from symptoms and having presumably normal gastric function. The remaining forty-five cases were suffering from duodenal ulceration and hyperchlorhydria, the presence of ulceration having been confirmed radiologically.

Method of Investigation

The patients were divided into groups (see table) and three different methods of treatment adopted—namely, light hospital diet (the meals being given at regular and rather frequent intervals and without any drugs), a Sippy regime with alkalis, and a Sippy regime with magnesium trisilicate (magsorbent). The cases were treated in bed. Following a full routine examination an ordinary fractional test meal was carried out and the presence of hyperchlorhydria confirmed. Treatment was then instituted, and on the following day a Ryle's tube was again passed and a specimen of gastric contents obtained every hour for a period of twelve hours, the specimens being withdrawn midway between the taking of food or drug. This "long test meal" was repeated at the beginning of the third week. The urinary pH of the patients having alkalis was determined morning and evening by means of B.D.H. universal indicator, and the blood urea and the carbon dioxide combining power of the blood (van Slyke method) were estimated every few days. The Ryle's tube was left *in situ* for the whole period unless the patient preferred to re-swallow it hourly. Analysis of the gastric contents was carried out in the usual manner.

Table showing the Number of Cases in Each Group

Group	Treatment	Ulcer Cases	Healthy Controls
A	Light diet (no drugs)	15	5
B	Sippy diet (with alkalis)	15	5
C	Sippy diet (with magsorbent) ..	15	5

In employing this type of test in the present series certain admittedly artificial criteria have been adopted. It has been assumed that a free acidity of 40 clinical units represent the upper limit of normal (Vanzant *et al.*, 1932) and that acidity above this level represents hyperchlorhydria. Cases were therefore considered to be "controlled" if the free acidity did not exceed 40 oftener than twice in twelve hours, and then not in consecutive specimens. A case was regarded as "partially controlled" if the free acidity reached 40 on not more than three non-consecutive occasions, one of these being in the fasting juice. If these criteria were not satisfied the case was considered to be "not controlled."

Results

Group A.—In this group the healthy subjects showed a comparatively low level of free acid throughout the day, with slight fluctuations from hour to hour. The taking of food had little effect on the acid level. Very different results were noted in the ulcer cases. The hyperchlorhydria was pronounced throughout the day, and in only one case was "control" obtained. In several cases, on the other hand, the hyperchlorhydria became more severe. Clinically, however, these cases improved rapidly and became symptom-free. It was difficult to decide whether healing of the ulcer was taking place in the presence of the severe hyperchlorhydria, but in view of the disappearance of subjective and objective signs, and the fact that no relapse has occurred after a year, it seems likely that this was the case.

Group B.—In the healthy subjects in this group a low acid level obtained throughout the twelve hours, but in no case did complete neutralization occur. Sippy himself stated that "control (that is, absence of free hydrochloric acid) should be maintained from the beginning of treatment," but in the present investigation this was never obtained in either the normal or the hyperchlorhydric case. Of the fifteen hyperchlorhydric cases six were "controlled" and four "partially controlled." It was noted, however, that there was no method of distinguishing clinically between "controlled," "partially controlled," and "not controlled" cases. In the cases "not controlled" within the first two days no "control" was obtained after three weeks' therapy, nor did any significant variation occur in their acid curves. A similar observation was made in the "partially controlled" cases, in which no further alteration of acid level resulted from therapy. It would appear that if "control" is not obtained within the first few days no further modification of acid secretion can be expected by prolonged treatment. In none of these cases on massive alkali therapy did alkalosis develop. This complication was noted by Hardt and Rivers (1923) in some of Sippy's own cases, and has since received considerable attention (Cooke, 1932; Oakley, 1935). The alkali reserve and the blood urea tended to rise slightly during treatment, but they always remained well within normal limits, and no signs of alkalosis were noted clinically or by routine tests. Relief from symptoms was satisfactory in all cases, and there has not been a relapse during the past year.

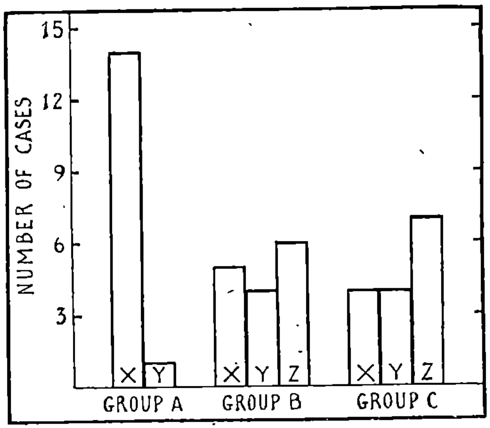
Group C.—The findings in this group were similar to those obtained in Group B. In the healthy subjects the degree of neutralization obtained was slightly less than in the analogous series in Group B. Of the hyperchlorhydric cases, seven were “controlled” and four “partially controlled.” Complete neutralization was not effected either in the normal or in the hyperchlorhydric cases, and it was again impossible on clinical grounds to discriminate between the different grades of “control.” No special advantage was noted in favour of magnesium trisilicate as compared with alkalis, although a slightly larger number of cases were “controlled” in this group. In cases in which the acid level was modified during the first few days no further modification took place after some weeks of treatment, and cases in which the acid curve was not affected during the first few days showed no significant alteration at a later date. All cases, however, showed rapid clinical improvement and became symptom-free: one case has since relapsed owing to a marked dietetic indiscretion, but the other cases have shown satisfactory progress over a period of one year.

Discussion

Many observers have indicated the disadvantages of the “short” test meal, and it seems probable that the “long” meal offers a better evaluation of gastric function, as the patient is proceeding with his ordinary occupations of the moment and becomes thoroughly accustomed to the procedure. The method has not as yet been widely employed, though among others who have made use of it may be mentioned Wosika and Emery (1936) and Mann (1937). Bengt Ihre (1938) has utilized it in an extensive investigation, using a Lagerlof-Agren tube and a special technique.

Hellbrandt and his colleagues (1936) showed that there was considerable variation in the composition of gastric juice examined at different periods of the day, and that the acidity often exceeded that demonstrable during an ordinary fractional test meal. These observations were confirmed in the present investigation, and it was further observed that the acid-level fluctuations occurring throughout the day in the healthy subject were surprisingly little affected by the taking of food or drugs, or by alterations in the type of food taken. Complete neutralization of free acid was never obtained, and there was considerable variation from hour to hour. The variations were slight in comparison to the fluctuations seen in the hyperchlorhydric cases, however, the latter showing very pronounced and unpredictable alteration from low to high acidity and vice versa. This alteration was unaccompanied by symptoms or clinical signs. The effect of diet and drugs in diminishing the height and duration of such spells of hypersecretion varied in individual patients, the acid level in some cases being considerably affected, and in others not at all. The graph indicates the relative degrees of “control” obtained by the different methods.

Although the cases were carefully studied, it was not found possible to correlate the variations in acid level with the symptoms and signs or with variations in these. The cases reacted similarly, irrespective of the treatment adopted, in that symptoms disappeared within a few days. Signs such as tenderness or rigidity took longer to disappear, but were absent in all cases by the end of ten to fourteen days. This improvement took place whether the acidity was diminished, unaltered, or increased, and clinically there was no indication as to whether or not the acidity had altered. Although twice as many cases on the diet–drug regime were “controlled” as those on light diet alone, the progress of both series has been similar, and there has been no relapse, during a period of one year, except in one case. To achieve “control” if possible seems physiologically sound, but these facts suggest that such “control” is not essential to the healing of the ulcer.



Graph showing results of treatment in hyperchlorhydric cases. X = “not controlled,” Y = “partially controlled,” Z = “controlled” cases.

Current research shows that there are factors other than hyperacidity concerned in the production of peptic ulceration, and the view that too much attention can be devoted to the local lesion is beginning to gain ground.

Summary and Conclusions

A series of cases of hyperchlorhydria associated with duodenal ulceration has been investigated, and it is noted that:

1. The hyperchlorhydria is but little modified by light diet without drugs, but symptoms are relieved.

2. The hyperchlorhydria is significantly modified by a Sippy regime.

3. No special advantage is noted in the use of magnesium trisilicate as compared with alkalis.

4. In the absence of vomiting, the risks of alkalosis developing during alkali therapy are slight.

5. No distinction can be drawn on clinical grounds between cases in which hyperchlorhydria during treatment is or is not altered.

6. Healing of a peptic ulcer and relief of symptoms can take place although the hyperchlorhydria is unaltered or even becomes more severe.

7. The “long test meal,” lasting at least twelve hours, is of considerable value in the investigation of gastric function and the assessment of the effect of different agents upon secretion.

It is a pleasure to express my thanks to Professor D. M. Dunlop and Dr. A. M. Scott for advice and criticism.

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ESTIMATION OF BLOOD SUGAR BY THE PRACTITIONER

A MODIFICATION OF FOLIN AND WU'S METHOD

BY

H. R. MILLAR

(*From the Diabetic Clinic, King's College Hospital, London*)

The need for a quick, easy, and inexpensive method of blood-sugar estimation has long been felt by a large number of doctors in their own practices and at the smaller hospitals where no laboratory facilities are present. Usually the difficulty has been either the expense of a colorimeter or the tedious checking of solutions and the liability to error in the titration methods.

Folin and Wu's method is a colorimetric estimation which for greatest accuracy demands the use of a colorimeter, but I have found that a simple dilution of the final colours in specially calibrated tubes and comparison by the naked eye gives results within ±10 mg. of the more precise colorimeter reading; this is accurate enough for all clinical purposes. The results shown below are duplicated estimations, one being obtained by the original Folin-Wu method, using the colorimeter, and the other by the means here described.

Folin and Wu's Mg.	Dilution Method Mg.	Folin and Wu's Mg.	Dilution Method Mg.
172	180	126	130
98	100	178	180
208	220	200	190
169	180	325	320
250	240	189	200
88	90	187	180
86	95	194	190
149	160	111	120
73	80	400	400
303	280	260	250
152	160	72	80
104	120	95	97
170	160	317	320
136	145	212	205
261	260	303	300
175	170	303	300
196	200	130	130
106	107	104	100
95	95	160	167
143	147	114	115
87	85	246	238
237	230	253	260
172	158	176	167
200	198	168	175
144	147	206	205

It will be seen that of these fifty duplicated estimations twenty-three have a difference of less than 5 mg., sixteen of 5 to 10 mg., nine of 10 to 15 mg., one of 15 to 20 mg., and one exceeding 20 mg. Twenty of these estimations were also duplicated entirely by the modified method; of these eight have no difference, eight have a difference of 5 mg., and four a difference of 10 mg.

Description of Apparatus

The method has been designed to enable estimations to be done with the minimum of technical knowledge and laboratory experience. Thus the solutions, which are the same as those used in the original method, are placed in order of use from left to right in a specially arranged box which has a handle on top and is easily portable. Each bottle contains its own pipette of automatic design, and the necessary tubes are calibrated to requirements. The solutions remain stable for many months, and ccuracy with the standard glucose is ensured by putting he required amount in a small sealed ampoule. The omparison tubes in which the dilution of the final colour made are calibrated to show the actual blood-sugar ading in milligrammes per 100 c.cm. at the point where e two colours match after dilution. The complete apparatus, with solutions sufficient for thirty-six separate estimations, can be obtained from Messrs. Baird and Tatlock (London), Ltd., 14–17, St. Cross Street, Hatton Garden, E.C.1.

Directions for Use

Blood.—Into a tube marked A place water (see Note 8) up to the mark (3.5 c.cm.). Collect blood into the 0.1 c.cm. blood pipette up to the mark by pricking the ear or finger or from venous blood, and wash this into the water in tube A by sucking the water up and down until the pipette is quite clean. Add to this 0.2 c.cm. sulphuric acid solution, shake, and add 0.2 c.cm. sodium tungstate solution. Mix thoroughly by gentle shaking. Place a filter paper and funnel in tube B and filter into this the solution from tube A. When filtration is complete take 2 c.cm. of the filtrate by means of the pipette marked F and put into tube C (marked at 12.5 c.cm.). To this add 2 c.cm. Folin copper solution, shake gently to mix, and place a capillary stopper in the top of the tube.

Standard.—Into tube S1 put a standard ampoule. Break this on the bottom of the test-tube by means of the glass rod provided. Do not remove the rod, but hold it above the water-line and add water up to the mark on the test-tube, and to this add 0.4 c.cm. sulphuric acid and 0.4 c.cm. sodium tungstate (0.2 c.cm. twice). Shake thoroughly to mix, holding the glass rod on to the side of the test-tube.

When thoroughly mixed, wash the filtrate pipette by taking 2 c.cm. of the solution and discarding. Take another 2 c.cm. and put into tube S2 together with 2 c.cm. of Folin copper solution. Shake to mix, and place a capillary stopper in the top of the tube. Place both tubes (C and S2) in a water bath or small saucepan of *boiling* water and leave for six minutes. The water bath or saucepan must be small enough to allow the tubes to stand so that their tops are well out of the water. Cool the tubes for two minutes in cold water and then add to each 2 c.cm. of phosphomolybdic acid solution. Shake gently until there is no more frothing. Add water up to the mark and mix by inverting on the *clean* thumb. Into the comparison tube marked S pour the standard solution from tube S2 up to the 100 mg. mark, and into the comparison tube marked U pour the solution from tube C also up to the 100 mg. mark. Dilute the stronger coloured solution with water until the colours match. Mix by inverting on the thumb after each addition of water. The result of the estimation is marked on the tube at the point where the dilution is completed.

Notes

1. Background for Matching Colours.—A good method is to stand with the light coming from behind, the tubes held up in front of the face with one hand and a piece of white paper held at an angle behind the tubes with the other.

2. A space of about ten seconds should be allowed to elapse after each addition of water before comparing the colours.

3. When the unknown colour is very much stronger than the standard, a first dilution may be made large enough to take the comparison to within 60 mg. or so of the standard colour. Thereafter it is advisable to add water at the rate of 10 to 20 mg. at a time.

4. Where doubt is felt as to the final colour match, take a reading, add another 10 mg. of water, and compare again. If the first reading was correct the second will be obviously weaker.

5. Automatic Pipettes.—These are designed to "deliver" the required volume, and as each solution has its own pipette the excess which pours over into the bulb may be put back into the bottle. Those contained in the bottles need not be cleaned. The filtrate pipette, however, should be washed with water and allowed to drain. It

should never be used wet, except when enough solution is available to allow of a first wash.

6. The Folin copper solution has a tendency to deposit cuprous oxide. This can be seen on the bottom of the bottle when present, and is orange-red in colour. The solution is kept in a dark bottle to prevent this; but if it occurs the solution must be decanted and the bottle washed and dried before the solution is returned.

7. Cleaning.—A good wash under running cold water, and draining, is all the cleaning necessary. Wash tube A before it has time to dry.

8. Ordinary tap-water is perfectly safe to use in making the estimations.

In evolving this method I am greatly indebted to Dr. R. D. Lawrence for his invaluable criticism and suggestions and for his kind permission to carry out the work in the diabetic clinic at King's College Hospital. I owe thanks to the whole staff of the clinic for their encouragement.

THE SEROLOGICAL GROUPS AND TYPES OF STREPTOCOCCI ISOLATED FROM EXCISED TONSILS

BY

E. V. KEOGH, M.B., B.S.

IAN MACDONALD, M.B., B.S.

JOAN BATTLE, B.Sc.

R. T. SIMMONS, A.A.C.I.

AND

STANLEY WILLIAMS, M.D.

(*From the Commonwealth Serum Laboratories and the Children's Hospital, Melbourne*)

A survey of the serological types of haemolytic streptococci in Australia has been proceeding at these laboratories for the past year. The progress findings in respect of the streptococci isolated from scarlet fever patients in Melbourne and Adelaide, from puerperal and surgical infections, and from normal throats in Melbourne have already been reported (Keogh and Kelsey, 1939; Keogh, Macdonald, Battle, and Puckey, 1939). The strains found in scarlet fever patients were rarely isolated from normal throats or from patients with puerperal or surgical infections. This present study was undertaken primarily to discover whether the predominant serological types of streptococci encountered in the tonsils would be those commonly associated with scarlet fever or those commonly found in surgical infections and in the throats of healthy adults and children. The results, however, will be discussed not so much from that particular viewpoint as from their bearing on the much-debated question of the indications for tonsillectomy.

There have been numerous previous investigations of the bacterial flora of tonsils, most of them, however, undertaken before the introduction by Lancefield of the precipitin methods, which enable a distinction to be made between probable pathogens (Group A) and probable non-pathogens (not Group A) among strains of haemolytic streptococci. So far as we are aware, no study of the tonsillar flora using the finer analysis of identification of the type of strains by the slide agglutination method of Griffith has been carried out, though a similar line of inquiry is being pursued in Sydney at the present time.

Methods

The tonsils examined were removed at routine operations at the Children's Hospital, Melbourne, during last summer and autumn (November, 1938, to March, 1939). Immediately after excision they were put in sterile containers and placed in a refrigerator until the following morning. Both tonsils of each patient were minced up in a single tube of sterile broth, a drop of which was plated on neo-peptone blood agar. Subcultures into tryptic digest broth were made from the various colonial types of beta-haemolytic streptococci present on the plates. The broth tubes were incubated overnight at 30° C. and the deposit used for typing by Griffith's technique. Strains which failed to show specific agglutination with the type sera at our disposal were then allotted to their respective Lancefield groups, using the formamide method of Fuller (1938) for extraction of the group polysaccharide. Any strains which agglutinated with our Type 4 or Type 28 sera were also checked as to group, since we find that these sera may give apparently specific agglutination with strains belonging to Group B, C, or G. The sera used had already been employed in the classification of large numbers of strains, and included samples of the following Australian types not appearing in the Griffith series, provisionally named "Wade," "Stewart," "Hale," "Woodbury," "John," and "Alli," which had been isolated from surgical and puerperal infections.

Results

Haemolytic streptococci were isolated from 259 of 378 pairs of tonsils (68.5 per cent.). Sawers and Barrett (1933) found haemolytic streptococci in the crypts of 61 per cent. of tonsils examined by them in Sydney. The strains which we isolated belonged to the following groups (Lancefield): Group A, 189 (50 per cent.); Group B, 21 (5.5 per cent.); Group C, 33 (8.7 per cent.); Group G, 28 (7.4 per cent.). It will be noted that 271 strains were isolated from 259 tonsils; in twelve cases two different strains were present. In eleven instances one strain belonged to Group A, the other to either Group B, C, or G; in the remaining case two different serological types of Group A streptococci were isolated (Types 12 and "Alli"). This incidence of Group A strains in the tonsils is ten times higher than in the throats of healthy children and adults. The details are set out in Table I.

TABLE I

Source of Strains	Percentage from which Haemolytic Streptococci were Isolated	
	Group A	Groups B, C, G
378 tonsils removed at operation	50.0	21.7
466 throats of healthy adults and children	4.5	13.1

This comparative incidence of Group A and non-Grou A strains in the throats of healthy subjects agrees with th findings of workers in other countries. Hare (1935) esti mated that in England about 7 per cent. of the genera population carry Group A streptococci and 13 per cen other groups. Davis and Guzdar (1936) found a carri rate of 3 per cent. of Group A streptococci and 6.4 p cent. of non-Group A streptococci in healthy Chine Our figures in the healthy group for Groups B, C, G (1 per cent.) may be high, owing to the inclusion of a num of children from an institution many of whom w carriers of a Group C strain. The objection may be ra that this very high incidence of the potentially pathoge

Group A strains is due to a greater *a priori* probability of isolating haemolytic streptococci from the excised tonsil than from a throat swab. But since there is no statistically significant difference in the percentages of non-Group A strains recovered from both sources, this factor cannot entirely account for the discrepancy. Further evidence against this assumption is provided by the fact that if haemolytic streptococci were present in the tonsils they were usually the predominant organism and were frequently obtained in practically pure culture. The data are shown in Table II.

TABLE II.—*Percentage of Haemolytic Streptococci in Bacterial Flora of Excised Tonsils (excluding 12 Tonsils which contained Two Strains each)*

Percentage of Colonies of Haemolytic Streptococci to Total Colonies per Plate	Group A Strains	Non-A Strains	Total
Less than 10..	30 (17.1%)	14 (19.7%)	44 (17.8%)
10 to 50	37 (21.0%)	10 (14.1%)	47 (19.0%)
50 to 90	50 (18.4%)	18 (25.4%)	68 (27.5%)
90 to 100	59 (33.5%)	39 (40.8%)	88 (35.6%)

It will be seen that colonies of haemolytic streptococci predominated in the plates from 63 per cent. of these infected tonsils, and were practically the only colonies present in 36 per cent. of them. It is improbable that throat swabs taken by an experienced paediatrician or otorhinologist, as were all in our "normal" series, would have failed to disclose the presence of streptococci in tonsils harbouring them in such numbers. Tonsils from which either the predominant scarlatinal strains (2, 17, "Wade") or non-scarlatinal strains (6, 27, "Stewart") were isolated showed no significant differences in the intensity of infection when these two groups were compared with each other or with the group of tonsils infected by other types. Taken at their face value the results reveal that, as a group, children coming up for tonsillectomy at the Children's Hospital, Melbourne, show a significant and large increase in the incidence of pathogenic streptococci in their tonsils, but no significant increase in the incidence of the doubtfully pathogenic non-Group A strains.

Of the 189 Group A strains isolated from the tonsils, 143 (75.6 per cent.) were identifiable by the type sera at our disposal. The distribution of types was as follows:

Type	No.	Type	No.
6	38	"Coleman"	4
"Stewart"	23	22	4
27	16	"Wade"	3
2	11	"Hale"	3
4	10	"Murphy"	2
"Alli"	10	9	1
11	6	"John"	1
17	6	Untyped..	46
12	5		

Of these, Types 6, "Stewart," and 27 account for 40.7 per cent. of the total. They are the types encountered most often in surgical streptococcal infections and in the throats of healthy subjects. Strains of the types (2, 17, and "Wade") which were together responsible for 90.5 per cent. of cases of scarlet fever in Melbourne during the same period are only rarely found in the tonsils, being 10.6 per cent. of the total. The data are given in Table III.

TABLE III

Source of Strains	No. of Strains	Type 2, 17, or "Wade"	Type 6, 27, or "Stewart"
Scarlet fever	198	90.5%	1.5%
Surgical infections	31	6.5%	58.1%
Tonsils (removed at operation)	271	10.6%	40.7%

The close correlation between the distribution of types in the tonsils removed at operation and in surgical infections is apparent. We have not yet investigated the streptococci associated with acute follicular tonsillitis, but sixteen strains labelled "tonsillitis" which we have received during the past year from various sources in Melbourne were equally distributed between "scarlatinal" and "non-scarlatinal" types: seven being either Type 2, 17, or "Wade," seven being either Type 6, 27, or "Stewart," and two belonging to other types. Also, of five strains isolated from cases of bronchopneumonia, three of which were complicated by empyemata, two belonged to Type 17, two to Type "Stewart," and one to Type "Wade." These findings, although limited in number, suggest that there may be no great difference in pathogenicity between these "scarlatinal" and "non-scarlatinal" strains, although infection with the "scarlatinal" types is much more likely to be associated with the appearance of a rash.

In a small group of the children there is conclusive evidence that the streptococci isolated from the removed tonsils had been present in the throat months previously and were responsible originally for acute or mild symptoms. Of eleven children from whose excised tonsils Type 2 strains were isolated the histories of ten could be traced. Of these ten, two had had scarlet fever due to Type 2, and six had been direct contacts of scarlet fever patients (Type 2). One had a history of severe septic sore throat (diagnosed in the acute stage at the Children's Hospital, Melbourne) but no history of direct contact with scarlet fever. The remaining child had not, so far as could be ascertained, been in contact with scarlet fever, nor had he any very acute symptoms. In respect of the two children who had had scarlet fever, and of one contact, we know the original date of isolation of the Type 2 strain, and can state definitely, therefore, that in these children the same strain of streptococcus had been present in the tonsils for four, five, and five months, respectively. As yet no such evidence is available for those types not associated with a rash, since the onset of the original infection is not so easily determined. We hope, however, in the next year, to follow the state of tonsils in children bacteriologically examined during an attack of follicular tonsillitis.

Discussion

The findings presented in this paper leave little room for doubt that the tonsils removed at the Children's Hospital, Melbourne, contain haemolytic streptococci in a proportion greatly in excess of normal—a difference due almost entirely to a preponderance of pathogenic strains (Group A), with no corresponding increase in the number of doubtfully pathogenic strains of other groups. The clinical indications for tonsillectomy, therefore, seem to be supported by the bacterial findings in about 33 to 50 per cent. of the cases. It seemed not unlikely that more rigorous indications for the operation might be required in a teaching hospital than in general practice. We therefore examined all tonsils (twenty) removed during a three-week period at a large private hospital. We were unaware of the names of the surgeons, who were ignorant of the purpose of the inquiry. The bacteriological findings in this group coincided so precisely with those of the hospital group that we did not pursue this line of investigation.

It can be argued that, given enough time, the natural resistance of the children would have succeeded in eliminating the streptococci from the infected tonsils, and that, even if the infection persisted indefinitely, there is no direct evidence that a tonsillar carrier of pathogenic streptococci suffers any disturbance in health. In the three instances in which there is certain evidence of the date of the original infection it could be shown that this had persisted for from four to five months and that the cocci were still present in large numbers at operation. We have no definite information as to the duration of infection with types other than Type 2. But since from four to eight weeks usually elapsed between the recommendation for operation and its actual performance, and in most cases symptoms had been present for weeks or months before operation was advised, the presumption is that if these symptoms were due to streptococcal infection of the tonsils spontaneous cure had not occurred.

Chronic tonsillar carriers of diphtheria bacilli do not suffer any apparent ill effects from continued absorption of toxin if it occurs. Such evidence is also lacking in regard to chronic streptococcal infections of the tonsils, apart from their debatable relation to rheumatic conditions. Group A streptococci produce erythrogenic toxin *in vitro*, whether they are commonly associated with scarlet fever or not, though there is a certain amount of direct and indirect evidence that strains of types commonly causing scarlet fever are more powerful toxin producers (Allison, 1932). The chronic nasal diphtheria carrier often has a persistent sanguineous nasal discharge, usually without any noticeable constitutional upset. Perhaps the child with chronic streptococcal tonsillitis suffers a roughly comparable inconvenience. Were the chronic diphtheritic rhinitis curable by as simple an operation as tonsillectomy the indication for such treatment would be strong, from the point of view of both benefit to the child and elimination of a carrier. Chronic streptococcal carriers must menace the health of other children, and we know of instances where they have been the origin of cases of scarlet fever. It would be premature to recommend tonsillectomy on these grounds alone, except in special circumstances.

The preceding remarks refer only to the children—from a half to a third of the total—from whose tonsils streptococci were isolated. It has been urged by various writers that not only are a number of tonsillectomies carried out when the symptoms are in reality due to sinusitis, but, further, that the chronic infection of the tonsils is caused by reinfection from the sinus secretions. We wish only to discuss whether such a process could account for the high proportion of streptococcal tonsillar infections in this series. Simultaneously with this investigation of the tonsils, McInnes, at these laboratories, has been studying the bacterial flora of acute and chronic infections of the maxillary antrum. Out of 100 consecutive cases haemolytic streptococci were isolated on only five occasions, and only two of the five strains belonged to Group A. It is unlikely, therefore, that the tonsillar infection with streptococci is secondary to streptococcal antral infection.

The above should not be construed as a panegyric on routine tonsillectomy. In Melbourne about 17 per cent. of children of school age have lost their tonsils, as compared with 50 per cent. in the English "public" schools, and of these 17 per cent. probably not more than a third could ever have been classed as streptococcal carriers. The deductions from the data form a working hypothesis for further investigations on these lines, in which we shall attempt to correlate the clinical, bacteriological, and histopathological findings.

Summary

Group A haemolytic streptococci were isolated from 50 per cent. of a group of tonsils removed at operation in Melbourne, but from only 4.5 per cent. of throat swabs from healthy children and adults.

Haemolytic streptococci of others groups (B, C, G), which are rarely the cause of serious human infections, were recovered from 22 per cent. of the tonsils and from 13 per cent. of the throat swabs of the healthy group.

The significance of these findings is discussed in relation to the indications for tonsillectomy.

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RETROPULSION OF THE NUCLEUS PULPOSUS

A CRITICAL REVIEW

BY

SIDNEY PAPPWORTH, M.Ch.Orth.

There should be a close season for the writing of articles. This would provide a breathing space in which the new ideas could be digested and the new operative procedures considered thoroughly from their theoretical aspects before embarking on the practice of them. Orthopaedic surgery is in great need of this close season. With the change from the use of hands and simple apparatus to the use of pneumatic hammers and mechanical marvels of rare alloys—a change, as it were, from the white coat to the boiler suit—there has resulted a flux of articles, mostly advocating some bolder, and therefore better, operative procedure. I, fortunately, have had enough leisure to examine in some detail the claims of a new procedure.

Before operating I decided to solve certain questions. These were: Can retropulsion of the nucleus pulposus cause symptoms? If it can, is laminectomy the only treatment? Are the results of laminectomy such as to justify operation? A study of the main articles on the subject revealed certain surprising facts which are the subject of this essay. The articles under review are:

I. Mixter and Barr (1934). *New Engl. J. Med.*, **211**, 210.
II. Mixter and Ayer (1935). Ibid., **213**, 385.
III. Barr (1937). *J. Bone Jt. Surg.*, **19**, 323.
IV. Barr, Hampton, and Mixter (1937). *J. Amer. med. Ass.*, **109**, 1265.
V. Mixter (1937). *Ann. Surg.*, **106**, 777.
VI. Barr (1938). *British Medical Journal*, **2**, 1247.
VII. Live and Camp (1937). *J. Bone Jt. Surg.*, **19**, 776.

The first six articles deal with a gradually increasing number of cases under the care of the same group of Boston authors, each article including the previously recorded cases in the series. I propose to refer to statements in these articles, and I shall then give the number of the article, the page, and the column for easy verification.

Can the Retropulsion cause Symptoms?

That retropulsion of the nucleus pulposus does occur is quite true. Andrae, working with Schmorl, found it in 15.2 per cent. of all spines. It must therefore be shown conclusively that the retropulsion actually causes the symptoms and is not merely an incidental finding.

AETIOLOGY

The condition is supposed to be traumatic in origin. In the first series there were nineteen cases, eight (41.2 per cent.) with a history, five of them of recent trauma (I, table opposite page 210). In the second series the percentage was 41.2—that is, fourteen out of thirty-four, seven having a recent trauma (II, page 386, column i). In the third series, which, of course, included the first two, the percentage had unaccountably risen to 77.5—that is, thirty-one out of forty, twenty-one having a recent trauma (III, 328). The percentage was given as about 80, with 50 per cent. of recent trauma, in the fourth article (IV, 1265, ii); became "about 60 per cent. of these cases will give a history of trauma at, or shortly before, the onset" in the fifth (V, 777); and returned to 80 per cent., with 50 per cent. of recent trauma, in the sixth article (VI, 1248). Love and Camp do not believe trauma to be an important aetiological factor, and give no details of its incidence in their cases.

AGE OF PATIENTS

Mixter and Barr's average was 39.3 years (I, table, 210). The second article does not give an average, but states that the youngest patient was 20, the oldest 64, and that two-thirds were between 30 and 50 (II, 386, i). Barr, in his series, while including the previous cases, seems to have forgotten the patient of 64, for he gives the ages as varying from 20 to 58, with an average of 37 (III, 327). The next article has the same average of 37 (IV, 1266, i). The ages are not stated in the next two articles. Love and Camp give the average age of their patients as 39.8. We may therefore take it that the average age of all the patients was about forty years. This is of great significance, because at this age, or even many years before, it is rare to find a "normal" disk among "normal" people if we take the adolescent spine as the "normal" (cp. Beadle (1931), Med. Res. Cncl. Spec. Rep. Ser. No. 161, p. 32). This must raise doubts again as to whether any disk lesion may not be incidental rather than causative of symptoms.

SYMPTOMS AND SIGNS

The main symptom is pain, but pain differing in no way from the ordinary case of "sciatica" or "low back ache." It has a certain remarkable peculiarity: the distribution bears no relation to the nerve root alleged to be pressed upon. All cases had pain in the postero-lateral area of the thigh—that is, the second sacral dermatome (III, 329). "The areas of referred pain were identical no matter whether the fifth lumbar or first sacral nerve was involved" (III, 330). Where there was loss of sensation this also did not occur in the expected dermatome. In view of Foerster's work one would not expect to find any loss of sensation in pressure on a nerve root. Once again, is the incidental finding being mistaken for the causative factor?

Muscular weakness and paralysis were found in the first series (I, table, 210). The authors of the second paper say that the "weakness is more apparent than real, due to the protective spasm. Yet flaccid weakness and rarely paralysis were definitely observed in six patients, a unilateral foot-drop being a rare but striking finding" (II, 387, i). Still more striking were the cases of Barr: "In one instance one foot was essentially flail. In one case the gastrocnemius was the only muscle involved" (III, 332). On anatomical grounds it would be difficult to explain how pressure on a nerve root could cause a flail foot; it would be even more difficult to explain how it could cause an isolated muscle paralysis.

If symptoms are due to pressure on a nerve root it is difficult to conceive of its causing intermittent symptoms. "Symptoms have remained unilateral and have been intermittent over a period of months or years, the patient enjoying relatively good health between attacks" (II, 387, ii). Barr (III, 329, and VI, 1248) says that 40 per cent. have remissions. "Almost half had a history of remissions and exacerbations" (IV, 1265, ii). "The pain comes in attacks and there may be long remissions" (V, 778).

The only significant change in the tendon reflexes is a loss of the ankle-jerk in 40 to 50 per cent. of cases—no matter which nerve root is affected. Mixter and Ayer say that "occasionally the knee-jerk was sluggish" (II, 387, i). Barr included these cases in his later series, yet says that the knee-jerks were normal in every instance (III, 331).

In the cervical cases of Mixter and Ayer there was a dynamic block in the cerebrospinal fluid in seven out of the eight cases, but it was "always partial and sometimes very slight indeed" (II, 389, ii). Yet this series contained Mixter and Barr's cases in which there was one complete block (I, table, 210). A co-ordination committee appears to be required in Boston.

The first significant pathological finding is a raised protein content of the cerebrospinal fluid. "Every fluid showed an elevation of its protein content. The amounts were between 56 and 91 mg. per 100 c.cm." (II, 387, ii). Perusal of the table in the first article raises doubts as to whether this is completely accurate, while the later articles reveal a normal protein content in from 12.5 (III, 334) to 15 per cent. (VI, 1248) of cases. The following point must be stressed: "The causes of a total protein content above normal limits need further investigation. We have records of twenty-one unoperated-upon cases that were subjected to lipiodol examination with negative findings. In four the total protein was below 40 mg. per 100 c.cm. and in seventeen the elevated protein content has not been explained satisfactorily" (V, 779). Is the raised protein in the operated-upon cases also a coincidence?

The direct radiograph is of no value. Intrathecal lipiodol examination reveals deformation of the dural sac shadow in the Boston series, but "a broadening of the nerve root shadows or displacement or deformity of the nerve root shadows" is looked for by the Mayo Clinic authors—Love and Camp. The true appearance of a disk lesion is therefore not clear. Whether the pictures reveal real pathology or merely incidental markings is even less clear.

DIFFERENTIAL DIAGNOSIS

Love and Camp sum up this question by saying that "there are no physical, neurological, or orthopaedic signs which are found alone in protrusions of the intervertebral disks. All of the known signs may also be found in other conditions." Other conditions were, however, considered. Thus we find Mixter and Ayer stating that "in several [cervical] cases a diagnosis of multiple sclerosis was considered until the demonstration of block [by lipiodol] made that diagnosis untenable" (II, 390, i). Lest it be thought strange that there should be any confusion between multiple sclerosis and pressure on a nerve root or on the spinal cord, I must add that Love and Camp also seem to have found difficulty even in their lumbar cases, for they write: "Usually there is a paucity of neurological findings in cases of protrusions of the disks, but in some there is definite and well-marked evidence of disease of the spinal cord. In some of these cases the clinical picture may be that of syringomyelia or multiple sclerosis. In one of our cases at the clinic, because of an associated severe diabetes mellitus, the diagnosis of diabetic neuritis was entertained until fluoroscopic study with lipiodol settled the question." We are not told how this confusion between pressure on a nerve root and the symptoms and signs of disseminated sclerosis or the dissociated anaesthesia, etc., of syringomyelia can arise.

Thoughts about the danger of confusing causative factors with incidental findings are bound to arise when we consider certain cases. Mixter and Ayer, for example, found matting of the roots of the cauda equina in one of their cases; Love and Camp found two cases of tumour in addition to the retropulsion. Again, Love and Camp had six cases of multiple lesions: one case had lesions of all disks between the eleventh dorsal and fifth lumbar vertebrae. We are not given the symptoms and signs in these cases, so we cannot discover which disk was responsible for symptoms and which were incidental findings. Case 5 of Mixter and Barr's series (I, table, 210) is that of a woman aged 53. There was no history of trauma. She complained of numbness and stiffness of the legs. She had incontinence and a complete motor and sensory paraplegia. There was a partial dynamic block of spinal fluid. The total protein in the cerebrospinal fluid was 37 mg. per 100 c.cm. A direct radiograph showed calcification in the disk between the fourth and fifth dorsal vertebrae. Lipiodol examination was not performed and operation was not allowed. She died later, and necropsy revealed calcification in a posteriorly prolapsed nucleus pulposus at the expected level. The patient, however, died of pernicious anaemia. Could this have really been a case of subacute combined degeneration of the cord, and the retropulsion merely an incidental finding—one of the 15.2 per cent.?

Treatment and End-results

Mixter and Ayer, in the second paper, report negative findings at laminectomy after negative lipiodol examination; yet Barr, while including these cases in his series, says that at operation the retropulsion was found in all cases. The next paper, however, states: "One exploration after a positive roentgenological diagnosis and six after a negative diagnosis gave negative results" (IV, 1268, ii). Mixter mentions these seven cases, but says: "In only two of these cases did the roentgenological findings suggest a ruptured disk" (V, 782).

There is one important point to consider about the actual operative technique—the question of spinal fusion. Barr states that spinal fusion and complete removal of the nucleus is desirable to prevent further extrusion (III, 337). "We believe that this lesion tends to weaken the spine and that exploration of the spinal canal will weaken it still further. Therefore we plan our approach to preserve the strength of the spine as much as possible and follow laminectomy by a bone graft if the patient does heavy work" (IV, 1268, ii). Fusion operations were done in 40 to 50 per cent. of the cases (IV, 1270, ii). Can the time in bed and the absence from work or the fusion itself have caused the relief of symptoms?

In the first series we find Case 19, a woman of 35, with no history of trauma. Her complaints were pain in the buttocks, anus, and vulva, and down the left thigh posteriorly. She had incontinence of urine and faeces, saddle anaesthesia of perineum and buttocks, and sphincter paralysis. Her legs were "essentially normal." The cerebrospinal fluid had no dynamic block, but 140 mg. of protein per 100 c.cm. *X*-ray examination showed "no changes of consequence," and lipiodol examination was negative. A lumbo-sacral laminectomy was performed, and a tumour, compressing the lowest fibres of the cauda equina and consisting of annulus fibrosus and nucleus pulposus, was removed. She developed a wound infection and died.

The next paper mentions this death and adds that three other patients in the earlier group had since died, two probably of urinary sepsis, while the cause of death in the third was unknown (II, 391, i). Though his series included all these cases, Barr reports that "two cases have died. One died of uraemia following a complete paraplegia with urinary incontinence due to the disk lesion which was present pre-operatively. The second patient died of pneumonia well over a year after operation" (III, 336). What happened to the other case of urinary sepsis and to the patient who died of wound infection? This latter death appears again in the next paper by Barr, Hampton, and Mixter—"There was one post-operative death. Three other patients have died of incidental causes but were relieved of their pain during their post-operative life" (IV, 1268, ii, et seq.)—and also in the paper by Mixter (V, 783). Yet in the sixth and latest paper Barr states: "There have been two deaths in our series: both of these patients had severe irreparable nerve damage from large ruptured disks" (VI, 1251). One is tempted to ask Professor Barr his method for the resurrection of the dead.

It is extremely difficult to evaluate results which are classified as cured, relieved, and unrelieved. Doubts as to the value of this method must inevitably arise when we consider certain cases in the first paper—the only one to give individual case histories (I, table, 210).

Case 6.—A woman of 63, with no history of trauma, complained of pain in the legs and around the abdomen, and of inability to walk. She was found to have hyperaesthesia of the legs and abdomen, spasticity of the legs, with increased reflexes; a cerebrospinal fluid protein content of 67 mg. per 100 c.cm., and a partial dynamic block. *X*-ray examination revealed hypertrophic changes, a narrow disk, and lipiodol block at the sixth to seventh dorsal vertebrae. A dorsal laminectomy was performed and an extradural mass compressing the cord was removed from the intervertebral disk involved. It consisted of nucleus pulposus. She developed a complete motor and sensory paraplegia. Under the column for results she is reported to be "unrelieved."

Case 7.—A man of 42 had no history of trauma. He complained of numbness of legs, of increasing difficulty in walking, and of pain in the back. He exhibited hypaesthesia below the umbilicus, and spasticity of legs with increased reflexes. The cerebrospinal fluid had partial (? complete) dynamic block and 114 mg. of protein per 100 c.cm. No films are reported, and lipiodol examination was not done. A dorsal laminectomy, with piecemeal removal of a mass from the intervertebral disk, consting of annulus fibrosus and nucleur pulposus and compressing the spinal cord, was performed. This man also developed a complete paraplegia, and he, too, is reported to be unrelieved.

The nucleus pulposus is degenerating notochordal remnants, degenerating because of lack of blood supply; even the rest of the disk has a poor, indirect blood supply. Retropulsed through a fissured disk the nucleus must degenerate more rapidly. Andrae quotes Ribbert as having produced herniations of the nucleus pulposus, and as having found that they are absorbed or become cicatrized and so shrink. Therefore, should not conservative treatment cure the condition without any deaths from wound infection, and without running the risk of reproach for having transgressed the principle of *Primum non nocere*?

Summary

I have made use of a number of articles to clear up doubts concerning a new procedure in an attempt to solve three questions: Can retropulsion of the nucleus pulposus cause symptoms? If it can, is laminectomy the only treatment? Are the results of laminectomy such as to justify operation? The condition of retropulsion of the nucleus pulposus is used as an example in a plea for a more careful consideration of new ideas before their adoption.

In March of this year the British Standards Institution circulated for comment a "Draft British Standard Specification for Haemoglobinometers." The draft was based on the carboxyhaemoglobin (Haldane) method. As a result of circulating this draft the institution has received a number of requests that an acid haematin (for example, Sahli) method, not involving the use of coal gas or carbon monoxide, should also be standardized. Before deciding to proceed with the additional standardization the institution desires further information and has accordingly circulated a memorandum on the subject to medical organizations and individual practitioners known to be interested in the subject. Any reader who would like a copy of this memorandum can obtain one on application to the Director, British Standards Institution, 28, Victoria Street, London, S.W.1.

Clinical Memoranda

Sulphapyridine and Soluseptasine in Meningitis due to Pfeiffer Bacillus: Recovery

Pfeiffer meningitis is usually fatal. Bloom (1931) reviews records of 302 cases with a mortality of 92 per cent. Neal *et al.* (1934) record 111 cases with a mortality of 96 per cent. If recovery occurs convalescence is usually prolonged over months, and residual palsies, blindness, and deafness are frequent. Wigers (1939) records a case with recovery treated with prontosil, polyvalent serum, and omnadin. He considers the prontosil had no evident effect. Teggart (1938) records a case with recovery treated by soluseptasine.

Case Report

On May 22, 1939, a boy aged 6, following a slight cold, complained of not feeling well and was found to have a temperature of 100°. He was sent to bed. He had been quite lively throughout the day and went to sleep as usual. At 11 p.m. he was fast asleep. About 3 a.m. on May 23 he woke screaming and complained of headache. When seen at 6 a.m. his temperature was 102°, pulse 140, and respiration 40. He was restless and semiconscious, with marked head retraction, photophobia, neck rigidity, double Kernig's sign, and papilloedema. At 10 a.m. 0.25 gramme of sulphapyridine (M & B 693) was given. The cerebrospinal fluid showed: turbid fluid under pressure; no clot; 4,000 white cells per c.mm. (normal, 2 per c.mm.), all polymorphs; and numerous Gram-negative bacilli. Cultures gave a growth of a pleomorphic bacillus having the cultural and microscopical character of haemophilic bacillus (Pfeiffer's, or "influenza" bacillus).

Treatment was continued with sulphapyridine 0.25 gramme four-hourly. The restlessness was controlled by 10 grains of potassium bromide as required. Orange juice, glucose, and water were taken well. On receipt of the report on the cerebrospinal fluid soluseptasine 2.5 c.cm. was given at 6 p.m., and on the 24th 2.5 c.cm. at 3 a.m., 4 c.cm. at 10 a.m., and 5 c.cm. at 6 p.m. By 10 p.m. on the 24th the temperature was 98.6°, pulse 90, respiration 32. The patient's general condition was much improved; he was quieter, and was taking fluids freely. On the 25th a second lumbar puncture gave a count of 720 cells per c.mm. The film showed these to be chiefly polymorph leucocytes. Numerous Pfeiffer bacilli were present, but not so many apparently as on the previous examination. Few colonies only of the bacillus were seen on culture. Chlorides amounted to 0.685 per cent. (normal 0.72 to 0.75 per cent.).

Soluseptasine 5 c.cm. twice daily and sulphapyridine four-hourly were continued till June 5, when a third lumbar puncture showed: 28 cells per c.mm.; reds 16,000. Cells appear in blood proportions, with no excess of polymorphs. No pus or organisms were found. Cultures gave no growth. The presence of blood vitiated further tests. Treatment was continued for a further week. Although the boy seemed perfectly well, papilloedema was still present. On July 25 he appeared to have fully recovered.

The rapid onset and quick response to treatment are worthy of note. At no time was the patient upset by the drugs.

G. Marsden Roberts, M.R.C.S., L.R.C.P.

Winchester.

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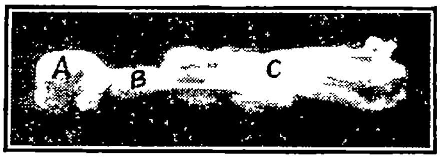
Sterilization by Section and Ligature of the Fallopian Tubes

Although a simple operation, sterilization by occluding the Fallopian tubes has in a certain number of cases resulted in failure in that pregnancy has supervened. Perusal of the literature almost gives the impression that the Fallopian tube when occluded had the property of recanalization. There is no evidence that this is so.

It is generally agreed that the safest operations are those which excise the interstitial portion of the tube or in which, when the tube is sectioned, the cut ends are buried in the broad ligament. If the tube is occluded by simply ligaturing with catgut it is not difficult to realize that the ligature may slip during tying. On the other hand, it is difficult to appreciate that a tube which has been well and truly cut and securely tied can recanalize. In many pelvic operations the anatomy is considerably distorted, and it is within the bounds of possibility that an inexperienced operator could pick up and operate on the round ligaments instead of the tubes.

A woman was brought to see me who on November 9, 1938, had had a "severe" operation for "something to do with the uterus." Owing to a bad obstetric history she had been sterilized. She had a period on November 25 and the last on December 20. The size of the uterus was that of a six-weeks pregnancy. Assuming that she conceived ten days after December 20, a tube must have canalized in less than seven weeks from the day of operation—a pathological event which was highly improbable. Her tubes had been occluded by ligatures, which I consider had either slipped or been applied to the round ligaments.



A = Uterine end of tube, patent. B = Fibrous cord.
C = Isthmal end of tube, patent.

My own practice is to pick up and tightly clamp the tubes about one-third of an inch from the uterine ends. The tube is cut between the clamps and tied with silk. No burying of the ends is attempted. The method is simple and there is no haemorrhage. I was fortunate to be able to examine the end-results of this method when operating on a patient whom I had previously sterilized and who wished to have another child. No adhesions were present and the tubes were lying free in the pelvis. The appearance of both tubes was the same, and is shown in the illustration. The cut ends were hard and fibrosed, and were joined by a cord of fibrous tissue. It was impossible to imagine that canalization could occur. The woman had been sterile for three years.

The specimen of one side was examined histologically. Four sections were examined from the site B and showed fibrous tissue only. Eight sections from A and C showed a patent lumen. The appearance of the specimen, the histological report, and the clinical history would indicate that the simple operation of section and ligature with silk is a satisfactory method of sterilization.

S. N. Hayes, F.R.C.S., F.R.C.O.G., Lieut.-Col. I.M.S.,
Professor of Obstetrics and Gynaecology, King Edward Medical College, Lahore, India.

Reviews

CHROMOSOME MECHANICS

The Evolution of Genetic Systems. By C. D. Darlington. (Pp. 149; 26 figures. 10s. 6d. net.) Cambridge: The University Press; London: Cambridge University Press. 1939.

The purpose behind the writing of this book is so clearly and succinctly expounded in the brief preface that this is quoted in full.

> "In the present sketch I have attempted to show genetics as the study of systems of heredity and variation, systems which rest on the basis of the chromosomes and are related to one another by processes of natural selection. I believe that the combination of the material basis with the evolutionary framework provides the only means of making sense of biology as a whole. I hope, moreover, that this elementary exposition will enable its readers to realize that the chromosome theory is now something more than a profession of faith, or even an instrument of genetic discovery; it is the key with which we are opening the door between the physical and the biological sciences."

The book is of the nature of a *tour de force.* Dr. Darlington, one of the world's leading cytologists, expounds his views on chromosome mechanics, their meaning, and their evolutionary significance. In this constructive task it is of course inevitable that much should be included that is at present uncertain and unproved. The only real criticism, however, is that a reader unfamiliar with the subject would be unable to discover how much is generally accepted, how much has a high probability behind it, and how much is based upon the author's own theories; for it must be admitted that some of the views put forward would not, in all probability, be accepted by the majority of Dr. Darlington's fellow cytologists. The preface describes the exposition as "elementary," but it is to be feared that the author will be alone in cherishing this illusion; actually it is a very difficult book indeed. Apart, however, from the one regret —that more guidance is not given to the reader as to the weight of evidence behind the various propositions advanced—this book is to be welcomed as a brilliant and stimulating attempt to build up a great mass of scattered observation into an ordered whole.

HOSPITAL ADMINISTRATION AND PLANNING

Hospital Organization and Management (including Planning and Construction). By Captain J. E. Stone, *M.C.*, F.S.A.A., F.R.Econ.S. Third edition. (Pp. 920; illustrated. 31s. 6d. net.) London: Faber and Faber. 1939.

The publication of a third edition of Captain J. E. Stone's *Hospital Organization and Management* is an important event. This is evidenced not only by a number of "forewords" and "introductions" by public men eminent in the hospital world, but by the acknowledged and accepted position which the two previous editions (1927 and 1932) have achieved as the most comprehensive and authoritative compendium in the field indicated by the title. The new edition is at once less and more complete than its predecessors. They contained a chapter on hospital law. This has now been omitted and expanded into a separate book, *Law for Hospital Authorities.* In every other respect it is almost impossible to conceive of a volume more comprehensive, more up-to-date, more accurate, more complete in every sense than this. Its more than 900 closely packed pages make it, of course, primarily a book of reference, but there are many consecutive pages which can be read seriatim with great interest. The variety of subjects dealt with is naturally very large, but the index is good.

The contents may be divided into two parts, though they are not formally arranged in this fashion. There are what may be described as the general problems of hospital policy, and there are the more specifically technical problems of construction, supplies, kitchen, laundry, and nursing arrangements, finance and accounting, administration and management. In the former of these divisions of subject-matter—the more important to those members of the medical profession and others who are not concerned with the detailed and intricate affairs of management—there is no problem which does not receive adequate statement and fair consideration. The latest reports and announcements are epitomized. Those of the recent Voluntary Hospitals Commission, the Committee on Scottish Health Services, the Committees of King Edward's Hospital Fund on Out-patients and on Pay-beds, the Medical Research Council, are all adequately noted, as well as the P E P Report on British Health Services, the British Medical Association scheme for a General Medical Service for the Nation and its Hospital Policy, and the B.M.A. and B.H.A. Joint Report on Contributory Schemes. The B.M.A. attitude towards other matters, such as the training of nurses, the payment of medical staffs, provident associations, and the relation of private practitioners and hospital services, is dealt with, and the London County Council Hospital and Medical Services are somewhat fully described. These are examples of the thoroughness with which the author uses and arranges his vast material. This *Journal* has previously described the book as "invaluable to all hospital workers"; in its latest form it is invaluable also to large numbers of persons who cannot be strictly so described.

GONORRHOEA AND ITS TREATMENT BY CHEMOTHERAPY

Traitement de la Blennorragie par le Sulfamide, une Sulfone et leurs Dérivés. By M. Palazzoli and F. Nitti. Preface by Professors F. Legueu and E. Fourneau. (Pp. 195; 19 figures. 35 fr.) Paris: Masson et Cie. 1939.

This little book contains more than its title suggests, for though it is called "Treatment of Gonorrhoea by Sulphonamide, a Sulphone and their Derivatives," the first eighty-five pages are mainly devoted to a description of the gonococcus and its characteristics, the normal histology of the urethra and its adnexa, the various examinations necessary in a case of gonorrhoea, and its complications and treatment. The last-named is reviewed historically, starting with the "laisser couler" attitude and passing through the balsams, injections, and irrigations up to the time of the introduction of the sulphonamides. This part is on classical stereotyped lines and makes no attempt to deal with the more difficult complications.

The second part contains a most interesting account of the rapid development of chemotherapy following the comparative failure of such substances as methylene-blue, mercurochrome, and trypaflavine. Of the sulphonamides the ones chiefly considered are para-amino-benzene-sulphonamide (1162 F., sulphanilamide), di-acetyl-diamino-phenyl-sulfone (1399 F.), para-(amino-phenyl-sulphamido)-pyridine (sulphapyridine, M & B 693), para-amino-benzene-acetyl-sulphonamide, and uleron. Some of these are actively bactericidal in themselves, others merely bacteriostatic, and the latter require the assistance of the body defences in order to complete the destruction of all gonococci. In any case the two desiderata for successful chemotherapy are (1) absorption of enough of the drug to make the tissue fluids bactericidal, and (2) a sufficiently prolonged concentration of the drug in the tissues.

The authors are whole-hearted supporters of chemotherapy plus adjuvant treatment in the form of protargol 1 in 2,000 or potassium permanganate 1 in 5,000, and hold that by this means a lower dosage of drug is required, less reactions are caused, and the course of the disease is shortened. They also consider that most people use much too heavy a dosage, and claim that in the case of 1399 F. 2 grammes the first day, 1 gramme the second day, and thereafter half a gramme per day are sufficient; a total dosage of 7 to 8 grammes is effective in favourable cases, while this may be extended to 12 to 14 grammes in cases which do not react so well. For sulphapyridine they recommend 3 grammes the first day, 2 the second, and 1 gramme the third, plus irrigations, and claim that a total of 6 to 7 grammes is sufficient for cure in the great majority of cases. Not everyone will agree with the doses given; many leading venereologists in this country and in America believe in a heavy initial dosage, particularly in the case of sulphanilamide, while the question of concurrent irrigations must still be considered *sub judice;* in any case 1 in 5,000 potassium permanganate seems unnecessarily strong for use in the very early stages. However, the proof of the pudding is in the eating, and these French experts certainly get results. All venereologists will do well to study this little book, in which they will see "the other man's" point of view and in which they will find much of interest.

ANTE-NATAL CARE

Ante-natal and Post-natal Care. By Francis J. Browne, M.D., D.Sc., F.R.C.S., F.R.C.O.G. Third edition. (Pp. 622; 101 figures. 21s. net.) London: J. and A. Churchill Ltd. 1939.

Professor F. J. Browne's *Ante-natal Care* is by now an established favourite with student and practitioner alike. The third edition is a larger book than its predecessors, and in addition to two new chapters it contains further illustrations and many sections that have been revised. A chapter on heredity, with its necessary references to wrinkled peas, Andalusian fowls, and fruit flies, makes very interesting reading, but the study of human heredity is a difficult one, and the application of Mendel's laws to the inheritance of morbid characteristics is by no means clearly established. The other new chapter discusses unsuccessful pregnancy. Sections that have been extensively revised deal with pregnancy anaemia, radiology in obstetrics, and the remote prognosis of toxaemia of pregnancy based on a twelve-year follow-up of toxaemic patients conducted by Professor Browne and Dr. Gladys Dodds. The fact is established that there is a 50 per cent. incidence of hypertension occurring after pre-eclamptic toxaemia and a 70 per cent. incidence after eclampsia. The theory is propounded that the hypertension may have occurred even in the absence of pregnancy, but facts and theories are not sufficiently differentiated. It is to be hoped that the vital issues involved will be clarified in the future.

The practice of waiting for repeated haemorrhages before examining for placenta praevia does not commend itself, and few surgeons would agree that an indication for Caesarean section is a "patient *in extremis.*" The danger of shock proving fatal in accidental haemorrhage is emphasized, but the fact is overlooked that shock may be aggravated by the immediate transfer of the patient to hospital. The administration of morphine and the application of heat can be life-saving, especially where long distances have to be travelled, but they are too often forgotten in practice and are not mentioned in the discussion of treatment.

The book is filled with a surprising amount of useful information and valuable advice. Many minor criticisms can be made, but these do not detract from the general excellence of an edition which is assured of a well-deserved popularity.

THOUGHTS ON THE STUDY OF ANATOMY

The Study of Anatomy. By S. E. Whitnall, M.D., B.Ch., F.R.S.C. Fourth edition, revised and enlarged. (Pp. 113. 4s. 6d. net.) London: Edward Arnold. 1939.

Professor S. E. Whitnall has recently revised his charming little brochure *The Study of Anatomy,* written for the medical student. This book, which was first published in 1922, is well known to teachers of anatomy, and may be read with profit by all students of medicine. In it they will find the thoughts of an experienced anatomy teacher who conceives anatomy from the same high point of view that inspired the unknown author of that wonderful poem dedicated to a skeleton, the manuscript of which was found lying beside a museum specimen in the Royal College of Surgeons of England. The poem is quoted in full in the early part of the book. The additional brief notes which appear in the fourth edition of this work include the importance of a knowledge of anatomy in the practice of preventive medicine; a "mild tilt" at certain mechanized physical exercises; and some characteristic and amusing remarks on teaching and lectures. The author also gives a short list of books which may be read as recreation and diversion from the more technical studies of the prescribed medical textbooks, and which may help the reader to discern the big things in life, which physicians should both know and make known.

Commenting on "lecturers and listeners," Professor Whitnall upholds the value of systematic lectures on anatomy by speakers who can hold their audiences by their personality, originality, and mode of presentation; while, referring to the listeners, he draws the pertinent distinction between "*hearing*" (exercising one of the senses but being intellectually passive) and "listening" (hearing with a purpose and taking note—"not necessarily notes"!). We may safely predict that the present edition of this book will meet with the same general approval and appreciation that has been accorded to its predecessors.

Notes on Books

Portions of the infra-red spectrum have been photographed for more than fifty years, but technical advances have only recently brought infra-red photography into practical use. Its application is very varied, and Dr. WALTER CLARK'S book *Photography by Infra-red* (Chapman and Hall, 25s.) worthily fills a long-standing need. It is a serious and comprehensive textbook of the whole subject and contains many basic scientific data, such as the characteristics of photographic materials and the methods of sensitizing emulsions, the optical characteristics of materials in the infra-red, and lists of materials which are available commercially. The chapter on medical infra-red photography surveys the work of a surprisingly large number of authors and lists the best sources of information. The study of the superficial venous system is one of the most fruitful applications, and the author gives detailed instructions for the arrangement of lights and camera and exposure data. He also describes the infra-red photography of gross specimens and of the eye, the use of the method in dermatology; transillumination, simultaneous infra-red and *x*-ray photography, and the differentiation of blood. Other chapters deal with the uses of the infra-red camera in botany and palaeontology, photomicrography, and such special applications as landscape photography, aerial survey, and long-distance ground photography. Infra-red radiation can also be measured by photographic means, which the author describes, and he includes two chapters on the penetration of radiation through the atmosphere. Some beautiful reproductions of infra-red photographs are included.

In *Human Development and Learning: An Interpretative Introduction to Psychology* FRANK SEELY SALISBURY, Ph.D. (McGraw Hill, 18s.) presents a volume which purports to trace the development of the human mind and the way in which the human being learns to cope with his environment. In this particular narrative there is nothing very original or new, and to English readers at least it will be found that the presentation is neither clear nor easy to read.

To help medical students with the difficulties of securing a clear-cut line of action in the management of infant feeding, Dr. V. L. COLLINS of Melbourne has drawn upon his experience as medical superintendent of the children's hospital in that city to produce an excellent small book called *Infant Feeding.* In less than 100 pages the subject is clearly set out, with definite instructions on a reasoned basis, and the treatment of artificial feeding is free from the bias of the Truby King school. The book is published in Melbourne by W. Ramsay, price 3s. 9d.

Pleasant Food for Diabetics, by A. SANDERS, formerly Sister at St. George's Hospital, is published at 3s. 6d. by Faber and Faber. In this small book carbohydrate, protein, fat, and calorie values have been entirely omitted; and the list of carbohydrate equivalents for 1 oz. bread is full of errors. Some of these "pleasant" recipes will produce unpleasant effects if used indiscriminately.

We have received a copy of an agreeable little book, *Plain Verse and Random Rhymes*, by R. D. MOTHERSOLE, M.D., M.S., F.R.C.S., published by John Read of Bolton. This collection includes items composed at intervals during the past sixty-five years. The sonnets entitled "Aquae Solis," "Cambridge," and "Mancunium" were written by Dr. Mothersole on the occasion of the B.M.A. Representative Meetings at Bath, Cambridge, and Manchester. Three other pieces appeared in the *Guy's Hospital Gazette.* Among the lighter numbers is a quatrain of advice to motorists:

If you aim at decent driving
Let this maxim be your guide:
Take your left-hand corners narrow
And your right-hand turnings wide.

On the occasion of his retirement from the chair of clinical medicine of the University of Perugia on reaching the age limit, the *Annali della Facolta Medico-Chirurgica della R. Universita de Perugia* has dedicated its twenty-eighth volume of over 850 pages to Professor Raffaello Silvestrini, formerly rector of the university and president of the medical faculty and Academy of Medicine. The volume contains fifty-three articles by Professor Silvestrini's colleagues at Perugia and other Italian universities or important cities. In addition to the first article, on microbiological methods for the investigation and identification of some sugars and other carbohydrates, attention may be drawn to the following papers: the feeding of the newborn deprived of their mothers, haemolytic anaemia in chronic malaria, syphilis and cancer, nitroglycerin poisoning, venous septicaemia, torsion of the great omentum, the effects of thyroid extracts on the course of pulmonary tuberculosis, electrocardiographic changes in experimental beriberi, cirrhogenic yellow atrophy of the liver, haematoma of the ascending mesocolon, oesophageal myomata, pituitary dwarfism, tuberculosis in the Italian army, menstrual asthma, cystic intestinal pneumatosis, pellagra in Spain, prophylaxis of dental caries in the Italian youth, trauma and tumours, diagnosis and treatment of pneumococcal peritonitis, autovaccinotherapy of typhoid fever, congenital osseous fragility, volvulus of the caecum caused by acute appendicitis, vitamin C in treatment of haemoptysis, nephritis and autovaccine treatment, diphtheria of the oesophagus, and thirty-four cases of fracture of the vertebral column. A bibliography of Professor Silvestrini's 138 publications from 1891 to 1938 and his portrait are prefixed to the volume.

Preparations and Appliances

EMERGENCY LIGHTING EQUIPMENT

An emergency electric lighting equipment which claims to be both automatic and economical has been brought out by the Salisbury Transformer and Electrical Company, Ltd. (70A, Hamilton Road, Salisbury). It is described as suitable not only for first-aid posts but also for operating theatres, observation wards of mental hospitals, control rooms, or any place where the sudden cessation of light would be inconvenient or perhaps dangerous. The equipment, working off the alternating supply, consists of a steel cabinet housing a charging unit, a transformer, and an all-metal rectifier, together with the necessary controlling devices. With it goes a sealed 12-volt battery of 72 ampere-hours' capacity, and, in the model we saw, six lamps, but any multiple of six can be provided with larger models. The disposition and power of the lamps can be modified to suit requirements.

On plugging the apparatus to the main supply the battery is charged at a rate of 6 to 7 amperes. When the battery is fully charged the main is cut off, and only a "trickle" allowed in order to keep the battery steady. Immediately on any failure of the main lighting supply the emergency lamps light up and remain lighted until the supply is restored, when the controlling device instantly switches off the emergency lamps and the charging of the battery begins again to replace the current taken. The battery when fully charged will run the six lamps for ten hours, or, with an additional battery, for twenty, which should suffice for the most dire emergency. The equipment can also be used for underground shelters, with the lamps arranged at convenient points. The apparatus in that case is plugged in to the mains supply, and when light is required it is necessary only to bring a pointer on the dial to the position of "immediate lighting." If then the mains current should be interrupted the lamps will continue to feed from the battery, and on restoration the battery will automatically charge up again.

PHRENAZOL

"Phrenazol (Boots Pure Drug Co., Ltd.) is a preparation of pentamethylene tetrazol. The chief clinical use of this compound is as a circulatory stimulant, since it acts on the vasomotor and respiratory centres and thus improves the oxygen supply of the heart. Phrenazol when administered by quick intravenous injection produces convulsions. In 1934 von Meduna introduced convulsion therapy for relief of schizophrenia. The value of this method of treatment is still a controversial question, but it is widely employed. Messrs. Boots provide two leaflets describing the use of phrenazol as a cardiac stimulant and as a convulsive agent.

IMMUNIZATION AGAINST SCARLET FEVER

Lederle Laboratories announce the issue of an improved streptococcus toxin for use in immunization against scarlet fever. Unpleasant reactions following administration are claimed to be greatly reduced by substitution of peptone in a concentration not exceeding 1 per cent. for blood or serum in the preparation of this toxin, without loss of immunizing properties. The product is marketed in this country by C. F. Thackray, Ltd., Leeds.

PREPARATION OF HOG'S STOMACH

Neopepsac brand of concentrated stomach substance (Boots Pure Drug Co., Ltd.) is a tasteless preparation of hog's stomach. The vendors recommend it for the maintenance treatment of cases of pernicious anaemia.

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A NEW EMERGENCY MEDICAL SERVICE

The medical services of this country have undergone profound disruption as the result of a war whose slow development is without parallel in history. The much-heralded *Blitzkrieg* is still in the textbook stage, and its place has been taken by a series of long-range diplomatic offensives, accompanied by the rumbling of distant thunder and very little lightning. One observer on the home medical front, disappointed, perhaps, at the sluggishness of events, has already sounded the death-knell of consulting practice. Men in consultant and specialist practice have indeed been hard hit, but their vigour, enterprise, and importance in medical life are such as to make us doubt whether they will consent readily to ante-mortem burial. The distribution and dispersal of medical personnel at the outbreak of war were based on what turned out to be an inaccurate forecast of "the shape of things to come" in the first few days. They did not come. Medical services have continued to be a rationed commodity, but there could be no corresponding rationing of civilian sickness. It is easy to allocate praise and blame after events have falsified prophecies, so we will here set down the facts in relation to the Emergency Medical Service and the position of consultants and specialists therein.

In July of this year the Central Emergency Committee of the B.M.A., in response to a request from the Ministry of Health, made suggestions for the terms and conditions of service of an Emergency Hospital Medical Service. It recommended that there should be two types of medical appointment within the service—a Class A or whole-time appointment, and a Class B or part-time appointment, which in the case of consultants permitted a maximum annual pay-out of £500; it recommended that an establishment of Class A officers should be set up by the Ministry. In general the Ministry accepted the Committee's recommendations, although it modified those relating to salaries and did not accept a proposal that a Class A establishment should be set up or a recommendation that special rates of compensation for death or injury should be paid. From this point the Ministry of Health, aided by its consultant advisers, its Hospital Officers, and its Group Officers, began the work of recruitment, handicapped, as it appeared later, by the lack of a defined Class A establishment. Outside London the great majority of appointments were made on a part-time basis. In the London area, however, the Ministry, advised by its Group Officers, permitted extensive recruitment to Class A. This action was supported at the time by many powerful considerations and expectations. It was believed that there would be a considerable number of casualties, and a large number of beds—widely distributed —were set aside for them. It was thought that many of these beds would be filled immediately after the outbreak of war and that private practice would largely disappear. But the war did not begin according to plan. Hence, nothing else has gone according to plan, and so new plans to meet the actual situation have had to be made. The time-lag has naturally been attended by much impatience and dissatisfaction. Many of our London hospital staffs have had to undergo the disillusionment of enforced leisure, and criticism has grown in volume.

Those in the whole-time service complained that private practice had not disappeared, and that in the public interest they should be allowed to undertake it despite their whole-time contracts. Private practice, according to many not called up for whole-time service, had disappeared and they were unable to live without paid employment. Another complaint was that the Ministry's reference in the contract to private practice was vague and confusing. Some consultants had been enrolled but not called up; others had been called up but not enrolled. Some, who had been officially called up, found that the Ministry did not accept responsibility for paying them. From the Provinces came the complaint that the sessional rate of pay was difficult to apply. The Ministry was naturally the focus of criticism. The Central Emergency Committee was held responsible for the restrictive conditions of the whole-time appointments, although in fact it had no responsibility for and did not expect this extensive recruitment to whole-time service. Group Officers were blamed for decisions taken not by them but by their employing body. But perhaps the real explanation is that the German Chancellor did not follow the course clearly demarcated by the military experts during the recurrent crises between 1933 and September 3, 1939.

It soon became clear that complete revision of the organization in the light of experience gained in the first few months of war was necessary. That the first attempts failed was not surprising in view of the fact that what was offered was the release from whole-time service, on the first proposal without pay, and on the second at one-third of the whole-time salary for a liability of service for four-sevenths of the medical officer's time. At this stage the Central Emergency Committee of the B.M.A. decided to assume the responsibility for making to the Ministry of Health detailed recommendations for revision of the whole service. It established a special Advisory Emergency

Hospital Medical Service Committee, which, in addition to representatives of the Central Emergency Committee, included the Presidents of the three Royal Colleges, London and provincial Group Officers, a representative of the London County Council medical staff, and representatives of consultants enrolled in the service. This Committee, under the chairmanship of Sir Robert Hutchison, rapidly completed its investigations and little more than a fortnight ago submitted its proposals to the Minister himself. We are now able to announce that the Minister has generally accepted these proposals, which are fully described in the War Notices in this week's *Supplement*. Briefly, the reorganization involves the creation of a Class A establishment of whole-time officers to consist in the main of administrative and house officers, and of practitioners of the standing of registrar or chief assistant. It is intended that, where consultant services are at present provided by Class A officers, these may in future be provided by consultants and specialists on a part-time basis, each practitioner enrolled in this group receiving a salary of £500 per annum with adequate travelling expenses, remaining liable without additional remuneration for spells of additional service according to the demands of the moment. Class B enrolment will largely disappear, except where the employment of practitioners on a sessional basis is necessary to supplement the services of salaried clinical officers. With this exception the general method of remunerating the hospital staffs, hitherto recruited to Class B, will be by a *per caput* payment for medical services on an occupied bed basis, this payment to pass to a staff fund for distribution among the staff. The full details of the revised scheme are worthy of careful study. It deals also with the payment of house officers and the method of recruiting them; it provides for continual consultation between the Ministry and the new Advisory Committee; it defines the patients within the scope of the Emergency Medical Service. The success of the reorganization depends largely on the willingness with which medical men now under whole-time contract for a minimum period of one year relinquish those contracts in favour of the part-time contract which will shortly be offered to them. This offer, by the way, will be made not only to those who have been enrolled and called up but also to those who have been enrolled but not called up, and to that not inconsiderable group who have been giving their whole-time service but have not yet been enrolled.

The Central Emergency Committee and its Advisory Emergency Medical Service Committee have good reason to be grateful to the Minister for his prompt consideration and acceptance of the revised proposals. It recommends to the profession the acceptance of a plan which goes far to remedy some very real grievances.

CLARIFYING THE PITUITARY

Dr. H. B. van Dyke's second volume on the physiology and pharmacology of the pituitary body[1] is in effect a critical digest of the experimental literature which has appeared since the publication of the first volume in 1935. The need for such a guide is shown by the fact that approximately 750 articles appear annually on the subject. It might be alleged that the quantity is more conspicuous than the quality, but it would be fairer to describe the present phase as one of consolidating in detail the advances previously made. Nevertheless, some notable advances have been made in clarifying certain aspects of the complex functions of this organ. Dr. van Dyke's provision of a brief summary of his opinion on recent work at the end of each chapter is most helpful in enabling the reader to assess such advances. On the anatomical side he calls attention to the fact that the complex blood supply of the pituitary includes a portal system to the glandular part. He thinks that there is little basis for postulating any chemical influence of pituitary hormones on the diencephalon, but ample evidence of nervous influences operating in the reverse direction, of which the release of gonadotrophic hormones through nervous action is an outstanding example. In this connexion it is of great interest to learn that in birds and certain mammals stimulation of the optic nerves by light conveys impulses to the diencephalon which influences this release and consequently the date of the mating season. In animals without such seasonal variations such stimuli do not play an evident part. The fact that morphological changes following gonadectomy can be corrected by oestrogenic or androgenic substances affords experimental support for the clinical use of the former at the climacteric. In human beings the chorionic villi of the placenta produce enormous quantities of luteinizing hormone until gestation is complete or the foetus dies. Chorion epithelioma and hydatidiform mole produce a hormone chemically identical with that of normal pregnancy. The complex nature of the influence of pituitary hormones on lactation is shown by the failure of injection of lactogenic hormone to initiate lactation after ablation of the pituitary. It is a point of considerable biological interest to find that this hormone can be assayed by its stimulating effect on the growth of the pigeon's crop glands, showing the close homology between them and the mammary glands.

Turning to the association between the adrenals and the pituitary, it appears that the morphological and functional maintenance of the cortex of the former, including the sex-determined "X zone," depends on secretions from the latter; the adrenotrophic anterior pituitary hormone also seems to play a part in the metabolism of fat, causing fat to be transported from the tissue depots to the liver. This is curious, since it has been known for some years that the posterior pituitary secretion, pitressin, has a similar action. Our knowledge of the role of anterior pituitary hormone in carbohydrate metabolism continues to grow, and the antagonism between it and insulin is now well established. In the absence of the latter the former exhausts carbohydrate reserves and leads to dangerous ketosis. Yet on the other hand the anterior pituitary appears to be necessary for the normal absorption of dextrose from the alimentary tract. We are indeed reaching the point at which the pituitary appears to intervene at every phase of metabolism throughout the body, justifying its description as the master gland. It is increasingly clear that it may also be described as the central transformer of nervous into chemical energy, just as the nerve endings are the site of a similar transformation at the periphery.

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[1] *The Physiology and Pharmacology of the Pituitary Body.* Volume II. By H. B. van Dyke. London: Cambridge University Press. 22s. 6d. Chicago: University of Chicago Press. 4.50 dollars.

"Q" FEVER

A number of cases of fever occurred in Brisbane in 1935 which presented features suggestive of a distinct clinical entity; similar cases had first been noticed in 1933. Derrick,[1] who investigated the outbreak, found that the illness was of acute onset with generalized malaise, intense and persistent headache, fever, and relative bradycardia. The temperature rose rapidly, usually remaining between 102° and 104° F., although sometimes there were large daily remissions. Two main types of illness were distinguished: in one the fever lasted six to nine days and terminated with a definite crisis resembling urban or murine typhus; in the other the fever was much more prolonged, and ended by gradual defervescence with occasional recrudescence. The fever, which was in no case fatal, differed from the typhus group in the absence of characteristic rash and, especially, in the consistently negative response to the Weil-Felix test with different strains of *B. proteus*. Photophobia was often present and sometimes congestion of the conjunctivae suggestive of leptospirosis, but all tests for this infection were negative. The relative absence of localized respiratory symptoms and the sporadic distribution were against a diagnosis of influenzal disease, and specific tests excluded the enteric and brucella groups of infections and all the commoner animal diseases. During the investigations inoculation of the patient's blood or urine produced in guinea-pigs a characteristic non-fatal fever of from four to six days' duration followed by long-lasting immunity to further inoculation. Guinea-pigs killed during the febrile attack had enlarged spleens, but other abnormalities were few, and as no organisms could be seen or cultivated it was thought that the infecting agent might be a virus. Burnet and Freeman[2] of Melbourne investigated this possibility and produced characteristic pathological effects by transmitting the infection to mice. Mice killed seven to ten days after inoculation showed enlargement of the liver and spleen, which contained large intracytoplasmic microcolonies of rickettsia-like organisms. These organisms take the form of Gram-negative tiny rods about 1 μ long and 0.3 μ broad, although occasionally long forms are seen. By Castaneda's method most of these organisms stain blue, but less so than psittacosis bodies, while some may be pink; with Giemsa they are reddish purple and in heavy infections easily recognizable. They are only found in intracytoplasmic accumulations in the infected animals and are not capable of growth in standard biological media. They survive in, but do not produce characteristic lesions of, the chorio-allantois of the developing chick; cultures in chick embryo in Tyrode's solution develop relatively slowly compared with viruses, and continue to grow in severely damaged tissues.[3] The organisms are with difficulty filterable through relatively permeable (0.7 μ) gradocol membranes. Infected tissues remain virulent for many weeks when stored in the refrigerator, and the infecting agent appears to be resistant to glycerol. In size, shape, staining reactions, intracellular habitat, and cultural and pathogenic properties the organism resembles a rickettsia, and the name *Rickettsia burneti* has been proposed by Derrick,[4] although Wilson[5] and Brumpt[6] are doubtful whether it should be classed as a rickettsia. The organism is present in the blood of patients during the febrile period, and may be present in the urine in the later stages and during convalescence. In routine diagnosis normal and immune guinea-pigs are inoculated. By differential centrifugation of the spleens of infected mice rickettsia suspensions have been obtained and are agglutinated by sera from the patients and experimentally infected animals; rising titres are found during the course of the disease and the method has obvious diagnostic value. Monkeys and dogs[7] are susceptible, rats are mildly so and develop inapparent infections, while rabbits are insusceptible. None of the susceptible animals are thought to play any part in the natural spread of the disease, and its epidemiology is obscure. Most of the cases occurred in meat-workers and dairy farmers, and it is thought that there may be a reservoir in some animal with a blood-sucking parasite as a vector. This mechanism of transmission has been suggested as an explanation of a number of accidental human infections during experimental work. These infections seemed definitely to be associated with experiments in mice, and it is suggested that in one group[9] the mite *Lyponissus bacoti* may have been responsible for the transmission, but in the other[10] infection probably occurred, possibly through some skin abrasion, by direct contact with infective mouse tissues. In an endeavour to find some natural reservoir of infection many bullocks, sheep, and pigs were examined without the organism being recovered. On the other hand, four out of thirty sera from bandicoots in South Queensland agglutinated at titres of 1:10 or more suspensions of the specific organism. The fevers of the Queensland coast have long been a complex problem, but the careful work described here seems at least to have disentangled one of them, and although the picture is still incomplete the investigators are to be warmly congratulated on their results.

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[1] *Med. J. Austral.*, 1937, 2, 281.
[2] Ibid., 299.
[3] *Austral. J. exp. Biol. med. Sci.*, 1938, 16, 219.
[4] *Med. J. Austral.*, 1939, 1, 14.
[5] *Bull. Hyg.*, 1938, 13, 123.
[6] Personal communication quoted in *Austral. J. exp. Biol. med. Sci.*, 1938, 16, 219.
[7] *Med. J. Austral.*, 1938, 1, 296.
[8] *Austral. J. exp. Biol. med. Sci.*, 1938, 16, 245.
[9] *Med. J. Austral.*, 1939, 1, 11.
[10] Ibid., 13.

STILBOESTROL

Since we first referred[1] to the actions of the synthetic oestrogenic substance known as stilboestrol discovered by Dodds, Golberg, Lawson, and Robinson,[2] much clinical and physiological work on the substance has been carried out. In this *Journal* Winterton and MacGregor[3] then reported that stilboestrol given by mouth or intramuscularly relieved post-menopausal disorders, amenorrhoea, senile vaginitis, leucoplastic vulvitis, and dysmenorrhoea as effectively as injections of oestrone. Simultaneously Bishop, Boycott, and Zuckermann[4] recorded that stilboestrol caused "oestrone withdrawal bleeding" in amenorrhoea and an oestrous vaginal smear in post-menopausal patients. Uterine proliferation in the monkey, similar to that following administration of oestrone, was also observed. These findings have been amply confirmed by other clinicians.[5,6,7,8,9] Whereas English workers found that the toxic effects of stilboestrol (chiefly nausea and vomiting) were present in only a small proportion of cases and were of a temporary nature, Continental workers considered these symptoms to be more serious; Varangot,[9] for example, states that only a few of his patients could tolerate a course of treatment lasting more than a month. The number of patients treated with the new drug is, however, as yet too small for any conclusion to be reached on this question. It is evident that there is much individual variation in tolerance. On the biological side, the observation of Dodds, Lawson, and Noble[10] that stilboestrol causes oestrus in rodents, sensitizes the rabbit uterus to the action of progesterone, and produces mammary growth in the guinea-pig has been confirmed,[11,12,13,14] and further similarities between the actions of the natural and synthetic products have been published. Thus oestrone depresses anterior pituitary function; Folley and Watson[15] have shown that the action of prolactin on the crop-gland of the pigeon and lactation in guinea-pigs and rats is inhibited by stilboestrol, which also inhibits lactation in women.[3] According to Noble[16] the drug depresses the diuretic, gonadotrophic, and growth-promoting functions of the rat's pituitary. The pharmacological effects of oestrone and stilboestrol are also alike, since Dawson and Robson[17] have demonstrated that they both inhibit the spontaneous contractions and tone of the isolated rabbit intestine *in vitro* and abolish its response to motor drugs such as adrenaline, histamine, etc. The castration cells of the castrate rat's pituitary are abolished by administration of stilboestrol.[14,18] Both the synthetic and the natural oestrogenic substance have a protective action against the necrosis in the tail of the rat brought about by injection of ergotamine or adrenaline.[19] This effect led Cobet and Ratschow[20] to give stilboestrol to patients with Raynaud's disease and other circulatory disorders. Their results were favourable, and they suggest that the action on menopausal flushes is direct. The only instance so far reported of failure to reproduce the effects of stilboestrol with oestrone is that of Mühlbock,[21] who could not inhibit the capon comb-growth stimulated by testosterone by simultaneous application of stilboestrol. This finding is, however, partially contradicted by the report of Kreitmair and Sieckmann[11] that stilboestrol diminishes the comb size in the cock but not in the capon. It is thus apparent that at the moment no differences have been observed between the actions of the natural oestrogenic hormones and the synthetic product.

STAB WOUNDS OF THE ABDOMEN

There can be no question that penetrating wounds of the abdomen call for laparotomy, since it is always possible that viscera or blood vessels may have been injured, and if such injury is not promptly repaired there is the obvious risk of peritonitis or of gross intraperitoneal haemorrhage. Writing on stab as distinct from gunshot wounds, L. T. Wright, R. S. Wilkinson, and J. L. Gaster[22] of New York point out that these may be divided into stab wounds of the abdomen and stab wounds of the abdominal wall; the mortality from the former is around 33 per cent., and from the latter is either low or altogether absent. Difficulty may arise, however, in deciding whether a wound has actually penetrated the coelomic cavity or not. Although in most cases it is true to say that at the time of admission to hospital there is adequate clinical proof of intra-abdominal injury, there is a border-line group which may cause anxiety. At Harlem Hospital it was at one time the custom to wait and attempt to ascertain clinically whether penetration of the abdomen had occurred or not, but the more recent practice of operating for every stab wound has been followed by a reduction in mortality for all types of case. Operation consists in dividing the abdominal wall down to the peritoneum and exploring the wound track to decide whether the peritoneum has been penetrated or whether there is haemorrhage within it. The peritoneum is not opened unless it is found to have been wounded or unless it obviously contains much blood. If a patient admitted with a stab wound is badly shocked he is given intravenous fluid by the slow-drip method. *X*-ray films are taken of both the chest and the abdomen, as pneumoperitoneum may be present and the chest may have been entered as well as the abdomen. The authors state that under no conditions should spinal anaesthesia be used for the exploratory operation, because if the intestine is perforated the augmented peristalsis increases the escape of intestinal contents into the peritoneal cavity. They favour either open ether or a combination of nitrous oxide, oxygen, and ether. If the large bowel is penetrated where it is mobile, as in the sigmoid or transverse portions, they exteriorize the injured part. In 184 cases consisting of 130 penetrating wounds of the abdomen and fifty-four of the abdominal wall, there was a total mortality of 13.5 per cent. These authors believe that suturing without drainage should not be done, and employ drainage in the majority of their cases of penetrating wounds.

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[1] *British Medical Journal*, 1939, **1**, 23.
[2] *Nature*, 1938, **141**, 247.
[3] *British Medical Journal*, 1939, **1**, 10.
[4] *Lancet*, 1939, **1**, 5.
[5] *Münch. med. Wschr.*, 1939, **86**, 261.
[6] *Klin. Wschr.*, 1939, **18**, 160.
[7] *Münch. med. Wschr.*, 1939, **86**, 582.
[8] *J. Obstet. Gynaec. Brit. Emp.*, 1939, **46**, 1.
[9] *Presse méd.*, 1939, **47**, 725.
[10] *Lancet*, 1938, **1**, 1389.
[11] *Klin. Wschr.*, 1939, **18**, 156.
[12] *Lancet*, 1939, **1**, 933.
[13] *Klin. Wschr.*, 1939, **18**, 346.
[14] *Münch. med. Wschr.*, 1939, **86**, 436.
[15] *Lancet*, 1938, **2**, 423.
[16] *J. Physiol.*, 1938, **94**, 177.
[17] *J. Physiol.*, 1939, **95**, 420.
[18] *Endokrinologie*, 1938, **21**, 20.
[19] *Klin. Wschr.*, 1939, **18**, 278.
[20] Ibid., 1939, **18**, 347.
[21] *Nature*, 1939, **143**, 160.
[22] *Surgery*, 1939, **6**, 241.

ATMOSPHERE IN JAPANESE TEXTILE WORKS

In a report published by the Japanese Institute for Science of Labour, Drs. Sinzi Katuki and Hirosi Sukegawa describe the atmospheric conditions observed by them in seventy-eight spinning and weaving factories at Osaka. In the cotton-spinning factories the temperature was above 80° F. for six months of the year, and was sometimes 95° during August, while the air was 70 to 80 per cent. saturated with moisture in a few of the workrooms, though usually about 60 per cent. saturated. In the weaving sheds the conditions were worse, the air usually being 75 per cent. or more saturated, as well as having a temperature of 90° (in August). The conditions were no better in the silk, woollen, and hemp-thread factories investigated, so it follows that they were extremely trying for the workers. In was found that marked differences existed in the atmospheric conditions of the workrooms in various factories, partly the result of the structure and equipment of the buildings. In one instance it was found that the humidity of the air in a weaving factory was induced by blowing in steam instead of spraying cold water, and in general the managers of the factories showed lack of understanding and indifference, while the technical staff did not appear to pay any attention to the health and efficiency of the workers. A detailed examination by Dr. Yogi of the output from a spinning factory showed regular variations during the course of the year, dependent chiefly on the environmental temperature. The feeling of fatigue experienced by the female operatives at a cotton mill was investigated by means of a questionary, and it appeared that in August 24 per cent. of the weavers had a feeling of tiredness at 11 a.m., and 43 per cent. at 4 p.m. The corresponding figures for December were 6 and 13 per cent. An investigation of the temperature "comfort zone" showed it to be about 72° in summer and 66° in winter, so it is evident that in summer the operatives seldom experienced comfortable working conditions.

MEDICAL STAFFING OF FIRST-AID POSTS

The Central Emergency Committee has since the beginning of the war been in constant touch with the Ministry of Health on the subject of the staffing of first-aid posts. It was urged upon the Ministry that in the interests of efficiency a medical officer should be in complete charge of each first-aid post instead of only being responsible for the training of first-aid personnel, as he is at present. The peace-time arrangements in regard both to scope of responsibility and to remuneration were looked upon as inadequate. At the outbreak of war many medical men attached to aid posts, disregarding the limited range of their responsibilities, gave a large part of their time, in some cases the whole of it, to bringing to a high standard of efficiency the posts to which they were attached. They did this without waiting to be assured that they would be properly remunerated for this work. Subsequently the British Medical Association asked the Ministry that the whole issue of the war-time duties and payment of these medical practitioners should be placed on a proper basis, and the Minister promised a representative deputation that the matter should be fully considered. His reply is now available and is set out in the war notices on page 227 of this week's *Supplement.* It relates to posts, fixed and mobile, in vulnerable areas only. It is now agreed that a medical man shall be in complete charge of his first-aid post, continue to undertake the collective training of personnel, and have new responsibilities in connexion with general maintenance and administrative control. Local authorities will be authorized to pay to the medical officer in charge a salary of £75 a year, in addition to the sessional fees for attendance owing to an actual air-raid on the locality of the post. This replaces the previous arrangement whereby the rate of payment was twenty guineas a year. In non-vulnerable areas, however, the twenty-guinea payment will continue in operation. Further, it is agreed that where medical officers were required to attend their aid posts at the outbreak of war the payment of sessional fees will be authorized up to the receipt of Circular 1869 issued on September 9, 1939.

We regret to announce the death of Sir William Prout, K.C.M.G., formerly physician to the Hospital for Tropical Diseases, London, and senior consulting physician to the Colonial Office; also of Mr. Naughton Dunn, lecturer on orthopaedic surgery in the University of Birmingham and honorary surgeon to many orthopaedic institutions.

Professor E. D. Adrian, M.D., F.R.C.P., F.R.S., has been appointed a member of the Medical Research Council in the vacancy caused by the death of Professor John Mellanby, M.D., F.R.S., last July.

As Australia is at war the sixth Australasian Medical Congress (B.M.A.), which was due to be held in Perth in September, 1940, has been postponed indefinitely.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

TRAUMATIC SYNOVITIS AND INJURIES TO THE LIGAMENTS OF THE KNEE-JOINT

(EXCLUDING MENISCUS INJURIES)

BY

G. R. GIRDLESTONE, F.R.C.S.

Synovitis of the knee is recognized by the enlargement, warmth, and tenderness of the joint; there may be a soft crepitation on movement, with pain and resistance before the normal limits of flexion and extension are reached, and the joint is usually held a little flexed.

Acute traumatic synovitis of a knee-joint may be due to: (1) a direct contusion of any part of the knee-joint; (2) a sprain—that is, the stretching or tearing of ligaments by a forced movement in any direction beyond normal limits; (3) overuse or unaccustomed use—for example, strenuous football or ski-ing after inadequate training; (4) a fracture involving the joint (to be dealt with in the next article). Chronic traumatic synovitis may follow continued excessive use of a normal joint or ordinary use of a joint which is poorly aligned for strain or weight-bearing.

Diagnosis

It is necessary to exclude a ligamentous sprain or rupture, a fracture, and an internal derangement before we can diagnose an uncomplicated traumatic synovitis. The ligaments are first tested and the exact locality and extent of any damage noted. If the injury has been at all severe radiographs (antero-posterior and lateral) are taken in order to exclude fracture, including the uprooting of a tibial spine.

An internal derangement is evidenced by the history of something going out of place and immediately locking the joint—that is, limiting its full range: a subsequent sensation of something slipping into place again is almost pathognomonic. Occasionally the displacement is so quickly followed by replacement that neither "locking" nor "unlocking" is noticed. The lock associated with internal derangement is quite different from the stiffness associated with muscular spasm or with fluid- and peri-synovial infiltration; though when there is much limitation of movement and swelling after injury a lock cannot be discovered. Indeed, it is often impossible for anyone, faced with a hot swollen knee a day or two after a severe sprain, to say certainly, or even probably, whether a meniscus has been damaged or not. But it is one's experience that, in general, the more severe the ligamentous damage the less likely are the menisci to be damaged. If the ligaments are badly sprained the menisci themselves usually escape, though their attachments to the lateral ligaments may well be torn. The menisci suffer from rotary movements on an axis, associated with the maintenance of axial compression by intact ligaments rather than the non-axial strains which stretch and tear the ligaments. It is, however, often impossible to be sure, but it is bad practice to diagnose or even to suspect cartilage damage without something very suggestive in the history, symptoms, or signs.

Localization of Damage.—Having come to the conclusion that one is dealing with an uncomplicated case of traumatic synovitis of the knee, it is of the greatest value to ascertain exactly what has happened, and to localize the pathological condition underlying the synovial reaction. The success of treatment, judged by rapidity and permanence, rests on the exact recognition of, say, a local bruise or infiltration round a ligament, which, though exquisitely tender and so painful as to make walking impossible, may be dramatically cured by injection of a local anaesthetic with massage and active use. In another case a heavy blow on the articular margin of the tibia may cause a reaction of the joint so severe as to establish traumatic arthritis and prolonged trouble unless it is immediately and completely put at rest for just a few days. Careful palpation and the trial of various strains will usually disclose the nature and situation of the injuries.

Principles of Treatment

First among the principles comes the recognition that all joints have an ample and delicate sensory innervation. The nerve endings in the subsynovial tissues serve to protect the joint against overuse (witness the neurotrophic joint), and the sensory spindles in the ligaments give warning of dangerous strains. This fully protective nerve supply explains the supreme need for *rest* once the joint tissues have become inflamed. The second principle concerned is that of *movement*. In dealing with a perisynovial or pericapsular infiltration associated with some severe injury there is an indication for early movement in order to avoid the organization and contracture of the granulation tissues into adhesions. The third principle concerns the preservation and restoration of muscular power and tone.

At first sight these three principles would appear mutually antagonistic, but if rest is made the rule, and movement the exception, in the form of a single, very gentle, and slow active movement through the greatest possible range, the inflamed tissues will not be irritated. It should be needless nowadays to point to the great superiority of active movements over passive by calling to mind the relaxation of the opposing muscles that follows active flexion and extension. Full rotary movements of the knee are beyond the control of the supine or sedentary patient. Their evolutionary value is to enable the body to turn and swerve on the fixed tibia and thus to escape the clutch or tackle of the foe. Then, again, the muscles can be kept in order by faradic stimulation and by contractions without movement, even by movements of the limb as a whole without movement of the knee.

We can then solve the dilemma set up on one side by the golden rule of rest for painful irritated tissues supported by Hilton, Thomas, and Robert Jones, and on the other by the desire to avoid adhesions, with delay or even impairment of function. If the ligaments are stretched or torn they need protection by posture or by splintage. In most cases the difficulty is easily overcome by an intelligent mixture of rest, movement, and massage: (1) Rest and, if need be, protection by splintage—for example, a broad aluminium or plaster-of-Paris gutter. (2) Single, very gentle, coaxed active major movements:

the masseuse should finally carry out the rotary movements of the tibia very gently and slowly. (3) Effleurage of the perisynovial tissues and surrounding areas directed toward emptying lymphatics and reducing the cellular infiltration in addition. In some cases graduated massage and active use rapidly restore normality. In a few instances the extra-articular injection of planocaine 2 per cent. into a tender and painful area, singly, or repeated daily for a few days, may allow the patient to be active and make all the difference in speed of recovery due to the absence of reflex and disuse atrophy.

Organized "Adhesions"

In a rather different category are the cases of synovitis seen at a later stage when there is already limitation of movement by organized adhesions; in these, preparatory physical treatment, followed by gradual active and passive movements, is indicated. The sedative effect of the infra-red ray or diathermy or plain radiant heat may be a valuable daily introduction to gradual manipulative movement. Manipulation under anaesthesia may be needed.

Chronic Synovitis

The knee in particular is dependent upon the integrity and strength of its muscles and ligaments, and chronic synovitis is peculiarly liable to persist after acute synovitis of the knee where the condition of the muscles has not been especially regarded. Although the original cause may have disappeared, synovitis is still present and kept up on account of the lack of muscular and ligamentous tone. A mild vicious circle exists. This is dealt with by impressing upon the patient the principles of (*a*) avoidance of strain, (*b*) the necessity for complete rest of the whole limb supported throughout its extent, and (*c*) active natural use, first for only two or three minutes at a time, many times in the day. Every means should be taken to improve local circulation by massage, diathermy, active movements, and exercises. The correct dosage of rest and exercises is assured if the muscles are gaining and the fluid losing day by day. The use of elastic knee-caps should be restricted to periods of fairly strenuous activity during the later stages of convalescence—for example, a rugger match—before the knee and its guardian muscles and ligaments are fully taut.

Rupture of Ligaments

The medial collateral ligament may be sprained or even completely ruptured by any powerful force opening the inner side of the knee. The tear is usually above the level of the joint near the upper attachment, which may be pulled away. Its wide attachment to the tibia is very seldom torn.

In moderate cases (sprains) the ligaments are pulled rather than completely ruptured, and treatment will vary with the degree of laxity and with the associated damage to the quadriceps and the vastus internus in particular if the damage concerns the medial ligament. A few days in bed with the joint slightly flexed over a pillow to relax the ligaments may be necessary to begin with. This should always be associated with massage, together with faradic treatment of the vastus internus and active muscular contractions of the quadriceps as a whole. As soon as the reaction of the joint is over, the patient is allowed up, but must be strictly told to wear only strong leather shoes and the heel on the side of the injury is wedged up—half an inch in the male and a quarter of an inch in the female. The patient can then walk on even surfaces with careful muscular control.

Treatment in severe cases (complete rupture) begins with the application of a plaster cast, unpadded except for a circle of felt to protect the patella. The knee is set at an angle of 175 degrees. A haemarthrosis may be aspirated before application of the cast, a lateral puncture into the suprapatellar pouch being the easiest, and the skin puncture sealed with collodion. The plaster cast extends from the great trochanter to just above the ankle-joint. Walking and leg-raising exercises are encouraged after the first day. For a really severe injury such as complete rupture three months of immobilization is necessary. But in many cases a long knee-cage can be substituted for the plaster after six or eight weeks.

The external collateral ligament is less often injured. Again the ligament does not rupture in the middle, but near one or other bony attachment; or its fibular attachment may be pulled off.

The cruciate ligaments may be torn or avulsed by extreme hyperextension, lateral angulation, or dislocation. The commoner causes are extreme hyperextension—as when at rugger a runner's impetus carries his body on with his weight-bearing leg held firmly by a tackler—or a backward displacement of the flexed tibia on the femur in a motor accident. To test for the integrity of the cruciate ligaments the patient sits opposite the surgeon with the knee flexed to a right angle and the foot firmly supported on the ground between the examiner's two feet. Then the examiner grips the head of the tibia and tries to force it backwards or forwards under the condyles of the femur (see Fig.). Forward movement of a sliding nature indicates laxity or rupture of the anterior cruciate, and backward sliding signifies a posterior cruciate ligament lesion.

Testing the cruciate ligaments.

The treatment consists in immobilization at an angle of 170 degrees for two or three months in a hip-to-ankle plaster, allowing and encouraging active hip, ankle, and foot movements from the start and weight-bearing as soon as the acute symptoms subside, usually at the end of a week. After the plaster a hinged bucket calliper is employed. Everything depends on developing exceptional muscular strength and tone by intensive gymnastic exercises. Even in old cases muscular control may be sufficient to discount great ligamentous instability, and may enable the patient to lead an active life. Such an attempt should always be made before considering operative reconstruction of the cruciate ligaments by fascial grafts, arthrodesis, or the permanent use of a long knee-cage.

Dislocation of the Patella.—This may be purely traumatic or be predisposed by knock-knee. The dislocation has generally been reduced at once. The diagnosis is made from the history and the site of tenderness. The treatment consists in the development of the quadriceps by active exercises and faradic stimulation. If the dislocation is recurrent there is need for expert choice of the best operation in regard to the particular case.

Dislocation of the knee is usually obvious; it will be revealed by radiographs if the enormous swelling obscures everything. Injury to nerves or vessels should be looked for and noted. Reduction is possible only under general anaesthesia; difficulties may be presented unless displacements of patella or hamstrings are recognized and dealt with first. If there is much effusion, aspirate under full aseptic precautions and observe for a week, immobilizing the leg on a slung Thomas splint; afterwards allow the patient to walk in a complete plaster cast at 170 degrees for eight weeks. This is followed by active physical treatment and the temporary use of a long knee-cage if necessary. The result is generally better than the prognosis.

EYE CASUALTIES IN THE WAR

BY

ROBERT DAVENPORT, F.R.C.S.

Medical Commandant, St. Dunstan's

At the outset of the war in 1914 no special arrangements were in force for either war-blinded men or the segregation of serious eye lesions in specialized hospitals.

Through the enthusiasm and energy of the late Sir Arthur Pearson St. Dunstan's was founded, and No. 2 London General Hospital organized by the authorities to receive and treat the men before passing them to St. Dunstan's. St. Dunstan's has trained and cared for its charges since 1914, adding new cases each year to its numbers, and building up an organization which is world-famous. With the ageing of the men the need for a home for the sick and those recovering from illnesses or operation increased, and in 1938 St. Dunstan's opened its new home on the Downs by the sea near Rottingdean. In it was put all that time and experience had shown to be of value to the blind, whose comfort, physical and mental, was provided for in every possible way.

Many months before September, 1939, the Council offered the home to the Government for adaptation as a hospital for the serious eye casualties of the fighting services in the event of war. The offer was accepted and plans were completed for conversion, staffing, and addition to the existing building.

St. Dunstan's by the Sea

As a result there was available on the outbreak of war a modern, very suitable building to which agreed ophthalmic personnel, surgical and nursing, was posted. The existing dormitories were readily turned into excellent wards by the minimum of necessary plumbing and wiring, and the existing treatment room adapted as a temporary operating theatre, the necessary equipment for which was already bought and on the spot. Rather more than 130 beds in four open wards, and in two corridors of two- and four-bedded rooms are available, and beds and equipment are in reserve for the conversion of lounge-room space into two more wards, so that somewhere near 200 cases can be housed.

Plans and specifications for a new operating theatre block were ready, and work was started on this necessary addition during the first week of the war, and the unit is expected to be ready for use by the end of November. A fly-over bridge carries the corridor to the block, which comprises changing rooms, anaesthetic lobby leading to two theatres, dressing room, and sterilizing room. Experience of the last war suggested that general, facial plastic, and nasal sinus surgery would need to be provided for, and one theatre is equipped to this end, although both will meet the demands of either ophthalmic or other surgery. With lighting restrictions in mind and the avoidance of glass no windows exist in the block, which is artificially lit throughout, warmed, and air-conditioned by modern means. The windowless block fits in well with the requirements of both ophthalmic and E.N.T. surgeons.

The block is tucked against a high chalk bank, but its exposed sides are protected from splinters by steel sheeting and its roof by sandbags. Where the new corridor leaves the existing building a small but efficient *x*-ray department is being fitted up, bringing it into close contact with the theatres. The equipment for this department and the theatre block is of a very high order, and this factor and the beautifully designed and fitted "wards" will mean that serious eye casualties sent to St. Dunstan's will find it an admirably sited, comfortable, and efficient hospital, fully prepared to do all that is possible for repair of their wounds. In addition to the resident ophthalmic surgical staff a panel of consultants has been arranged so that all branches of work may be dealt with, and to add to the existing nursing personnel, specialized and auxiliary, there is held a list of V.A.D.s available for duty when required.

For those whose sad lot can only be that of blindness there is ready the whole organization of St. Dunstan's. Such men will be retained for the training, technical and psychological, which is directed to the founding of a useful and happy life under the disability of blindness.

USE OF STORED BLOOD FOR TRANSFUSION

SOME PRECAUTIONS TO BE TAKEN

We have received the following communication from Drs. H. F. Brewer, M. Maizels, J. O. Oliver, and Janet Vaughan, Medical Officers in Charge of the Emergency Blood Transfusion Depots at Luton, Maidstone, Sutton, and Slough, set up by the Medical Research Council on behalf of the Ministry of Health.

Since the outbreak of war considerable use has been made of "stored blood" for the treatment of civilian patients needing transfusion. Reports that stored blood has a somewhat greater tendency than fresh blood to cause reactions appear to have led to slight apprehension in certain quarters. We believe that at least some of these reactions may have been due either to faulty technique in the preparation of apparatus, the withdrawal, storage, or administration of blood, or to the use of unduly haemolysed blood, and that they should not be taken as condemning "stored blood" of itself. Blood has been distributed to a number of hospitals from the four Emergency Blood Transfusion Depots for London and the Home Counties, where the methods of collection and storage have been those outlined in the memorandum recently issued by the Medical Research Council. The reports returned have been uniformly satisfactory, although one observer, while appreciating the immediate restorative use in collapsed and exsanguinated patients, suggests that the tonic and anticoagulant value is less than that of pure blood.

Complete records of 160 miscellaneous cases—medical, surgical, and obstetrical—are available. They were given in all 219 pints of blood and were treated in forty-one different hospitals. The maximum amount any one patient received was six pints given as a continuous drip. Blood varied in "age" from a few hours to three and a half weeks. Group O blood was used in the majority of cases, but Group A and Group B blood were also provided on request. Slight rigors were recorded in ten cases, but in several such instances inquiry showed that the blood had been given cold. In three cases there was transient jaundice; one patient passed red cells in the urine after transfusion, but the medical officer in charge was doubtful whether this could be attributed to the transfusion. No case of haemoglobinuria was recorded. No fatality proved directly attributable to the transfusion of stored blood has occurred.

We would like to stress the importance of the following significant points if optimum results in the use of stored blood are to be obtained:

1. The anticoagulant solution should be prepared with freshly distilled water from a clean still, and it should be filtered and autoclaved immediately.

2. All apparatus must be scrupulously clean. In the case of the rubber tubing a stiff wire carrying a swab or narrow elongated brush (for example, a 0.22 rifle-barrel cleaner) should be passed throughout its length, since mere washing under the tap is insufficient to remove small adherent pieces of clot. Rubber tubing freshly obtained from the manufacturers *must* be washed to remove the French chalk with which its inside is coated.

3. Strict surgical asepsis should be observed whilst actually collecting blood.

4. Storage should be carried out at 2° to 4° C.

5. Blood showing undue haemolysis should not be used. A zone of discoloration due to haemolysis extending above the corpuscle layer up into the supernatant citrated plasma for 1/2 to 1 centimetre or less (this occurs very occasionally with blood over seven days old) may be allowed, but greater degrees, including complete tingeing of the plasma, should be a definite contraindication to use.

6. Corpuscles and plasma may be mixed before the transfusion by as little and as gentle agitation as possible.

7. The blood should be warmed to body temperature before use; *the avoidance of overheating is equally important.* The highest temperature advised is 104° F.

The elimination of grouping errors as a cause of reaction is assumed.

L.C.C. SERVICES IN WAR TIME

The hospital and medical services of the London County Council and the efforts which are being made to carry on normal work in addition to the demands of the emergency are the subject of a statement issued by the heads of the departments concerned.

Hospitals and Special Units

At the beginning of the war all admissions to adult convalescent homes and hospitals had to be suspended, but one convalescent home—Princess Mary's, Margate—which had been evacuated and scheduled, is now resuming admissions, the Ministry of Health having intimated that it does not require any beds to be kept empty. Owing to evacuation of expectant mothers, the maternity units at the Council's general hospitals have been reduced from twenty-one to fourteen. The radiotherapeutic units for cancer at Lambeth and Hammersmith hospitals are in full operation. Stocks of radium have been put in a place of safety, but radium treatment will be available for cases in which it is considered essential. The admissions to the plastic surgery unit at St. James Hospital were suspended, but partial facilities have now been resumed. Additional plastic surgery units are being established under the Government scheme at certain emergency hospitals outside the metropolitan area. The mental observation wards continue to function normally, but at the other special units the numbers of patients under treatment have in some cases been considerably reduced as a result of evacuation. The puerperal fever unit at the North-Western Hospital is continuing as usual. Admissions to the fever hospitals and sanatoriums are continuing, but there are fewer cases. Five courses in fever instruction for medical students are at present proceeding.

Approximately 20 per cent. of the beds which had been allotted for casualties can now be utilized also for civilian sick. When the patients under treatment exceed this number, application is made to the group officer for some patients to be transferred to hospitals in outlying districts. Hospitals have been classified into five groups so that a reciprocal arrangement exists whereby any hospital can apply to another in the same group for any assistance it may need. Special arrangements have been made for a blood transfusion service within the Council's hospitals in addition to the one provided under the national organization.

Nursing, Midwifery, and Ambulance Services

The scheme for the training of nurses for the war period introduced by the General Nursing Council provides that in each sector all the hospitals, including fever hospitals and mental hospitals, shall be considered as one institution in each category for the training of nurses. Where possible, sister-tutors are to be evacuated with the trainees from vulnerable areas. The time spent by the trainees at the casualty clearing station is to be strictly limited, and arrangements are made to ensure that each nurse obtains the requisite experience in the various branches, if necessary by transfer from one hospital to another.

In order to cope with the anticipated increase in home confinements, due to reduction of maternity hospital accommodation, thirty additional temporary midwives were taken on by the Council, but the services of sixteen have already been dispensed with as the expected pressure in certain districts has not been realized. The Council's fixed establishment of domiciliary midwives is eighty-one. About 124 midwives from the Council's maternity hospitals have been drafted to the reception areas to assist in the confinement of evacuated expectant mothers. The number of confinements in London attended by the Council's midwives during the fortnight ended October 14 was 246; the number attended during a peace-time fortnight in August was 194. There has been a substantial increase in the number of confinements booked for the next two months.

The immediate effect of war conditions upon the ambulance service was to reduce the number of calls for general (that is, non-accident) cases and to increase those for accidents. On the outbreak of war the ambulance service was augmented in order to deal with the heavy increase in the number of casualties which might be expected if London were bombarded from the air. Many calls have been received as a result of accidents arising from the lighting restrictions.

Venereal Diseases and Tuberculosis Schemes

The L.C.C. venereal diseases scheme is being administered as completely as a reduced staff will allow. With the exception of that at Great Ormond Street Hospital all the clinics are functioning, and it is reported that the attendances in most cases are larger than were expected. At the Whitechapel Clinic during the first week of war attendances dropped from a pre-war level of about 1,900 to just over 1,000, but during the first week of October the attendance was 1,434.

The necessity for providing beds for war casualties compelled the evacuation of a large number of tuberculous patients; others were discharged at their own request. The total number so evacuated or discharged was about 1,500. The effect of the evacuation on the Council's special tuberculosis hospitals was to reduce the number of patients to 720 in seven institutions where the beds normally available number 1,400. The reduced number of beds necessitates a very careful selection in order that the best use may be made of the accommodation. There is, however, sufficient provision for patients with a favourable prognosis. Those not requiring specialized residential treatment and who have suitable home conditions are not being accepted for treatment in present circumstances. There is no waiting list for suitable patients, and a certain number of empty beds is at the disposal of the Council. The borough dispensaries are functioning more or less normally, except in a few cases where the service is curtailed. Provision has been made whereby all patients receiving artificial pneumothorax treatment are handed the necessary particulars in a sealed envelope, to enable the treatment to be continued, whatever the area to which they may remove.

Mental Hospitals

One of the Council's mental hospitals has been closed for mental patients and is to be used entirely as an emergency hospital. Nine others are being used in part as emergency hospitals. The Maudsley Hospital, which deals with early cases of mental disorder suitable for treatment on a voluntary basis, has been closed because of its situation in the danger zone. The medical and nursing staff of the hospital have been distributed between the neurological units at Sutton and Mill Hill. It is hoped that the out-patient department of the Maudsley may be reopened before long, and a proposal is being discussed for the admission to the neurological units at Sutton and Mill Hill of a few patients who otherwise might have had treatment in the Maudsley Hospital itself. The out-patient clinics originally conducted by members of the Maudsley staff at three of the Council's general hospitals are still functioning.

It is mentioned as a matter of some interest that during the week immediately following the declaration of war the number of patients admitted to the mental hospitals on reception orders was 100, whereas in the corresponding week of 1938 the number was 62. Since the end of the week following the declaration of war, however, the average number of admissions has been 19 per cent. less than the pre-war average. Probably the sudden increase at the beginning of September was attributable to nervous tension, supplemented no doubt by a proper anxiety on the part of relieving officers to get the observation wards in London as free as possible of patients likely to be in danger if enemy activity should begin. Doubtless the clearance made during the first week is reflected to some extent in the falling off of admissions in subsequent weeks, but the postponement of expected trouble probably has also operated, and it may be that voluntary evacuation has removed from London some persons who might have been in need of care.

Mental Deficiency

The Mental Deficiency Acts are being administered in London as fully as possible. At the outbreak of war all examinations of and inquiries into mental deficiency automatically ceased. It has since been ascertained, however, that the Board of Control expects the administration of the Mental Deficiency Acts to be maintained, and it has been necessary to recall certain staff (medical and lay) to carry on essential work. Accommodation in the Council's institutions for the residential care of defectives is congested by reason of the overcrowding necessary to make room for emergency hospital beds, but it is considered that the Council should be able to provide for urgent new cases. Some 4,000 defectives are still under supervision in their parents' homes in London. The occupation centres were closed on the outbreak of war.

The work of examining blind persons under the Blind Persons Act ceased at the outbreak of war, and it has now been considered necessary to resume. For this purpose medical and lay staff have been recalled from the hospitals.

Since the early days of evacuation teachers in the reception areas, dealing with children from vulnerable areas, have been concerned at the growing inadequacy of the clothing which the poorer children brought with them. Summer dresses and suits and underwear, and thin shoes, have suffered seriously under the wear and tear of country life, and many of the children's parents are unable to make good the deficiency. The National Union of Teachers has made a practical contribution to solving the problem by making a grant of £1,000 for the purchase of clothing for the most necessitous cases. This money will be administered by the Save the Children Fund, which for thirteen years past has been collaborating with the National Union of Teachers in the distressed areas.

MEDICAL ASPECTS OF CONCENTRATION CAMPS

The Government White Paper[1] and newspaper summaries of it have given the world some idea of the conditions of life in the concentration camps for political prisoners in Germany before the war. To find parallels to these conditions it is necessary to go back to exceptional periods of unrest among Oriental or savage peoples. The documents in the White Paper are closely corroborated by much other independent testimony, and an interesting sidelight from the medical point of view is contributed to the *Catholic Medical Guardian* for October by a German doctor who was confined in the camp at Dachau.

The beginning of the imprisonment for many victims was, he says, a long journey in a train, into the compartments of which they were driven by the boots and rifle-butts of their S.S. guards. Twenty were crowded into a space made for ten and the doors and windows closed. On arrival at the camp they ran the gauntlet of two lines of guards armed with bayonets and clubs. They were then kept standing at attention on the parade ground for hours with no food or water or opportunity to attend to the calls of nature. Some had their ears permanently damaged, and some had blood-suffused eyes from beating on the head. Thereafter they were forced to work at the severest manual labour day after day, and the chief object of their guards seemed to be to inflict as much torment as possible. The drinking of water was forbidden throughout the day; the loads were calculated to be beyond the strength of the workers; the guards kept up a rain of kicks and blows. Prisoners who broke down were sent to the punishment squad. Heads were bare in high summer; clothes were continually wet in winter.

Diet and Punishment

The diet supplied on the average between 1,200 and 1,500 calories a day. The usual morning allowance was a quarter of a litre of black unsweetened acorn coffee, with no nourishment value. The prisoner took to work such bread as he might have saved from the day before. His evening meal was usually soup, containing 300 grammes of potatoes, cabbage, or beans, with 300 grammes of black bread. Occasionally the issue was supplemented by 50 grammes of black pudding, or by a little jam, cheese, or syrup. Fat was almost completely absent; pulse of various kinds was common. Sanitation was relatively satisfactory in Dachau, but in Buchenwald it was abominable. Though dysentery and enteritis were common, the latrines could only be used at certain hours of the day. Clothing and shelter were miserably insufficient.

In addition to the individual brutality of the guards, formal punishments included flogging, suspension from trees, and solitary confinement in darkness. Flogging was standardized at twenty-five lashes with a steel rod or ox penis on the buttocks, after which the prisoner must stand at attention facing a wall for twelve hours without eating or drinking. Huge haematomata developed around the wounds, and fever, whether of resorption or suppuration, followed. For tree-hanging the prisoner had his hands tied behind his back. At first the pain was agonizing, owing to the strain upon the brachial plexus and the cutting of the chains into the skin; the body gradually stretched owing to the elasticity of the intervertebral disks, and the sensation was that of being torn asunder by the legs. The acutely painful phase was followed by paraesthesia and then by a sensation of paralysis; the muscles then became lifeless and the backs of the hands oedematous. The suspension usually lasted an hour and a half, and for days afterwards the hands and feet were stiff and unfeeling.

Psychological Features

On the psychological side, says this writer, neurosis is endemic, and takes the form of anxiety, ruthless egotism, or despair. The ordinary prison neuroses are rare, as the captives are mostly innocent of crime. Queerly enough, physical neuroses, especially of the gastro-intestinal tract, improved in spite of extremely indigestible food. The author therefore thinks it a safe generalization that the best cure for this class of nervous disorders is "authoritative and imperative suggestion therapy." The psychical injury which does not express itself in physical symptoms must, however, be incalculable. The author makes some reflections on the possible effect which their occupation may have on the minds of the youths who are specially selected and taught the technique of cruelty to defenceless men which is a necessary qualification for the S.S. guard. It is a melancholy thought that 7,000 young men are posted to Buchenwald at a time and that any tendencies to sadism they may have are given full opportunity for development. Parties of Hitler Youth are taken through the camps, and one of the functions of these institutions seems to be to brutalize the German youth of military age. The student of morbid psychology would find an ocean of material in unexpurgated accounts of these camps which for reasons of decency cannot be published. The colossal work of undoing the spiritual harm that is being wrought among victims and guards alike baffles the imagination.

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[1] Cmd. 6120. London: H.M. Stationery Office. (3d.)

Medical Treatment

Generally speaking, this writer found medical treatment perfunctory. At the worst the sick were driven to work and left to die where they dropped. Occasionally obvious complaints like a "struma" or hydrocele were treated and the patient allowed lighter work. Duodenal ulcers, weak hearts, active tuberculosis, and diabetes were disregarded. Patients in hospital were left entirely to the mercy of the orderlies or of fellow prisoners doing supervision duty. A certain amount was done on the surgical side: palmar phlegmons were cut out, and compound fractures of the hands and feet caused by accident or violence were treated by amputation. A civilian dentist gave some treatment at Dachau, but in Buchenwald not even extractions were performed; periosteal abscess and caries were extremely common. Innumerable dirt diseases, such as impetigo, furunculosis, erysipelas, eczema, and infective fungoid diseases, were rife, and, owing to the lack of vitamins and rest, wounds healed with difficulty. The sick, even those unable to walk, were dragged to roll-call twice a day by their friends. A common complaint was oedema of the backs of the hands and ankles. In Dachau large numbers suffered from tenosynovitis. In Buchenwald hundreds of prisoners caught an acute itching dermatitis of the edge of the pinna, due either to a fungus, silica dust, or allergy produced by the nettle-fibre blankets. It yielded to painting with a zinc solution. There was, of course, a wide variety of disease not attributable to the camp conditions, but a very large number of acute cases were fatal—perforated appendix, ileus, cancer, and pneumonia. In the opinion of the author 80 per cent. of the deaths could have been prevented by proper medical attention.

Moral Fortitude

A few items are recorded on the positive side. Some prisoners were able, by submission to the discipline and by developing the habit of enduring privation, to school and strengthen their characters. The White Paper mentions the *Bibelforscher*, members of a religious sect who were almost as badly treated as the Jews, but whose courage and religious faith were remarkable and who professed themselves ready to suffer to the utmost what they felt God had ordained for them.

Hunger and work appeared to agree fairly well with some of the diabetics, who although they received no insulin showed no sign of coma. Some of them had lost as much as 80 lb. and still felt fairly well. Almost all sufferers from psoriasis were strikingly benefited. Colds were rare. All prisoners dreaded the camp hospital with its appalling death rate, and the will not to be ill must have strengthened their weakened organisms.

The question that remains in the mind after reading these terrible reports is why those in power should find it necessary to expend so much trouble and ingenuity in heaping gratuitous torment on thousands of helpless people.

Local News

FRANCE

[From our Correspondent]

War-time Organization of Medical Practice

The decree-law of September 12 places all those doctors who are not already at the disposal of the Ministry of National Defence at the service of the Ministry of Public Health. In other words, all French doctors, men and women, come under the national defence scheme and are in a sense mobilizable if not actually mobilized. There are approximately 30,000 doctors in France; between 25,000 and 26,000 are in practice and the remainder are attached to certain special services or have retired from practice. Those doctors who remain civilians but who may be called on to go anywhere to fill gaps created by the calling up of their colleagues for army service may well experience difficulties in adjusting themselves to new conditions. It is indeed inevitable that this gigantic reshuffle should create much searching of heart, not least among the doctors who are serving in the army at 70 francs a day and who are naturally wondering what is happening and what will happen to the practices they have left. In these circumstances it is fortunate that there exists a mutual aid society, Sou Médical, to which some 9,000 doctors belong. In peace time it defends the professional and material interests of its members, and now, in war time, its staff of experts is busy solving also the war-time problems of its members.

Hospital Reform

The new law governing the public hospitals in France is a brave attempt to bring into one comprehensive scheme a tangle of public and philanthropic hospital activities dating from many generations back. For centuries gifts and legacies for the benefit of the sick poor have been administered with an independence inspired by a parochial rather than by a national outlook; hence the faults of overlapping and of lack of co-ordination. When the status of the public hospitals was legally defined in 1851 the inmates were the indigent sick, precisely those persons for whom charitable legacies were intended. Now, with hospital treatment sought by almost every class, the need for a fair distribution of hospital charges between various bodies, central and local, has become imperative. The new law introduces certain necessary reforms and codifies the rules and regulations. Principles are laid down governing the selection of patients seeking admission to hospital, and the administrative bodies responsible for the functioning of the public hospitals are reorganized, attention being paid to the representation of the medical profession and the insurance societies on the administration committees of hospitals with more than 200 beds each. Provision is made for co-operation between hospital administration and the teaching of medicine. For the better distribution throughout the country of hospital facilities, all plans for erecting new hospitals and modifying old ones must be approved by the Ministry of Public Health. Small local hospitals and certain institutions in the large towns will, however, be exempt from the paternal interference of the central authority. Facilities will be provided for the suppression of those hospitals and allied institutions whose conduct has not been found to be in conformity with modern standards of hygiene. There is also to be a tightening up and unification of the rules governing the appointment of the medical staff of the public hospitals.

Professor Leriche on Amputation Stumps

In *La Presse Médicale* for September 13 and 20 Professor René Leriche of Strasbourg comments disconcertingly on the shortcomings of the amputation stumps of the last war. About 16 per cent. of the 80,000 patients amputated in the period 1914–18 had to be re-amputated, sometimes more than once. "Retouching" was necessary in 31 per cent. of the total, and as for the amputations of the lower limbs 50 per cent. of the patients had to be operated on afresh for the satisfactory adjustment of artificial limbs, etc. A few of the secondary operations were necessitated by the development of osteitis or painful scars, but in the opinion of Professor Leriche the chief trouble was the inability of the operating surgeon to think in terms of modern prosthetics. When the operator follows the dictates of the most orthodox textbooks, showing a brilliant mastery of technique but encountering the disapproval of the prosthetic surgeon and of the patient himself some months hence, it is the operator and not the prosthetic surgeon whom Professor Leriche blames. He reviews the various amputations of the limbs in the light of the experiences of the last war, and shows how they have robbed many a classic operation of its prestige. Chopart's disarticulation, for example, has been found to be worthless in 95 per cent. of cases, and the same may be said of many another operation sanctified by textbooks.

Reports of Societies

FAULTS OF MEDICAL LITERATURE

Sir Robert Hutchison's Lecture

The David Lloyd Roberts Lecture was delivered before the Medical Society of London on November 16 by Sir ROBERT HUTCHISON, President of the Royal College of Physicians, whose subject was " Medical Literature."

The lecturer began by glancing at the vast amount of contemporary medical literature. It had been estimated that there were over five thousand medical periodicals in the world. In this country there were about 130, and here the yearly crop of medical books was over 400. The mere question of storage was itself a problem. In the library of the Royal Society of Medicine room had to be found for 3,000 new volumes each year, taking up shelving 60 ft. in length and 8 ft. in height. More serious was the effect of all this proliferation upon the interchange of knowledge. It was increasingly difficult to find the needle in the haystack. Facts might be said to be buried rather than recorded. It was almost physically impossible for anyone to follow Bacon's aphorism: " When a man addresses himself to discover something he first seeks out and sees before him all that has been said about it by others." Science seemed likely to be suffocated in its own secretions.

After recounting the familiar jest about stacks of unopened journals in consulting rooms, Sir Robert Hutchison said that current medical literature could not be permanently ignored with impunity, and he quoted Osler as saying, " The doctor who does not use books and journals, who does not need a library, who does not read one or more of the best weeklies and monthlies, soon sinks to the level of the cross-counter prescriber, and not alone in practice but in those mercenary feelings and habits which characterize a trade." All the busy practitioner could do was to tear out from his weekly journal those articles which interested him and had a direct bearing on his work and file them. In that way, with proper indexing, he could build up a useful collection. If in addition he got every year such a publication as the *Medical Annual* it should not be difficult for him to keep reasonably up to date. The contributor to medical literature needed something more—a clue through the labyrinth —and the *Quarterly Cumulative Index* was an excellent guide.

When the required articles had been found they had still to be read and abstracted, a laborious business which nowadays required a considerable knowledge of languages. He looked with no great favour upon the preparation of bibliographies and abstracts by professional librarians, who, however skilled in the business, had no medical training and could not be expected to know the relative value of different papers nor the points which should be picked out. The work of the literature hunter would be easier if there were more periodical publications of the type of the German *Zentralblätter* and *Jahresberichte*. The ideal would be an international clearing house in which the whole periodical literature of the world would be sifted by experts and summaries made of such papers as contained any original as opposed to merely repetitive or didactic matter.

Measures for Stemming the Flood

But the root of the difficulty—the immense bulk of raw material to be dealt with—would still remain untouched. What was it that prompted doctors to write? The motives were mixed: some reasonable and creditable, others less so. Good reasons were the necessity for putting on record new observations or results of experiments and the impulse to teach. Bad reasons were the desire for prestige and priority. He remembered at a meeting of the British Medical Association many years ago Lawson Tait holding up a copy of the *Journal* and saying that he divided it " into the intra-professional and the extra-professional advertising portions." That was grossly unfair. After all, the only way in which a young man could let it be generally known by his colleagues that he possessed special knowledge or skill in any department of work was by contributions to the professional journals. One must draw the line, however, at the publication of the same paper in more than one journal and at the equally reprehensible practice of sending out reprints wholesale.

Another motive for writing which was of doubtful validity was the desire for " self-expression "—a form of mental exhibitionism. No doctor would surely desire a better epitaph than the one recorded of a member of the surgical staff of the London Hospital in the eighteenth century, that he was " guiltless of any contribution to medical literature." Sir Robert Hutchison equally deprecated ceremonial orations, presidential addresses, and memorial lectures, such as he was then delivering. " Surely there are better ways of remembering the dead than by boring the living."

He suggested a strict birth control in regard to new journals. The amalgamation of existing journals might well be carried out in many cases. Some journals might be suppressed altogether, among them those which appealed only to a local patriotism. There were five such local journals in England alone, and others in Scotland. Superfluous journals led to superfluous writing, and editors were driven to tout for contributions, whereas it was the writer who should woo the editor. The ideal current medical literature for this country would consist of one good weekly journal catering especially for the general practitioner, which would contain articles mainly clinical in character, but also critical reviews and abstracts of the work published in the more specialized periodicals here and abroad. In addition each special branch of medicine should have a journal, but not more than one, appearing at longer intervals for the publication of original work in that sphere.

Stricter editing was also desirable, involving the refusal of many articles that at present found their way into print, and the cutting down of others. Almost everything was too long—lectures, speeches, sermons, and books. Powerful astringents might be required to check the verbal diarrhoea which afflicted so many writers, but it was the editor's business to administer them.

On the Writing of Books

The over-production of books was as great a nuisance as the multiplication of journals. The publishers were largely to blame. In their rivalry with their competitors they easily persuaded young would-be authors to write for them, and recouped themselves for their many failures at the expense of the more successful. It would be a great gain if, instead of issuing expensive and elaborate textbooks, publishers would provide more concise, fully documented monographs giving a complete account of present knowledge in a limited field.

Sir Robert Hutchison also criticized the dullness of medical literature, the excess of facts and comparative absence of ideas, generalizations, and hypotheses, so much recording and so little reflection. The dullness was curious considering that the subject-matter was so interesting.

> "A medical textbook might well be like one of those omnibus volumes of 'Detection, Mystery, and Horror,' for, after all, diagnosis is detection, disease is often mysterious, and, heaven knows, our work is full enough of horrors, but, as it is, the average textbook is about as readable as a telephone directory. Take, for instance, the biography of a red blood corpuscle from its birth in the bone marrow, with its capillary wanderings and its moving adventures by flood and field to its normal gradual old age and burial in the spleen or to its tragic end in a haemorrhage. It might be made a vivid Odyssey, but how dull it all sounds in a textbook of physiology—as arid and sterile, as dry and dusty as the sands of the Sahara."

Medical writers also fought shy of humour. They did not agree with the Virgilian tag that in order to speak truth it is not necessary to pull a long face. Yet a writer had never really mastered his material until he could jest about it.

The lecturer complained that one of the unfortunate results of the increasing specialization of knowledge was that the writings of workers in one department were often hardly to be understood by those outside it. Many papers on medical psychology, biochemistry, or iatromathematical subjects might, so far as he himself was concerned, just as well be written in Chinese. In addition to being prolix and obscure, medical literature exhibited only too often an absence of any sense of style or even of grammar. The average of medical writing was probably not so high now as it was last century. Certainly there were no textbooks like those of Michael Foster, Fagge, or Osler, and the modern multiple productions which had succeeded them had lost the individual touch. Much of the didactic writing of old days was in lecture form, and lectures, although the modern publisher did not favour them, were usually more readable than the formal textbook. One reason for slovenly writing was dependence on the stenographer and the dictaphone. A deeper reason was a defective literary and linguistic education. The great models of English prose were probably less read by the younger generation, and a literary diet of newspapers, detective novels, and the productions of scenario writers was no substitute for them. It was deplorable that in an examination of the standard of the M.R.C.P. it should have been found necessary to drop Latin and Greek because almost no candidate in recent years had ever attempted the comparatively simple translations from these languages, while very few showed even any knowledge of German. It might be said that style was of less importance than matter, but that was too superficial a view. As Allbutt said: "The man of science ought best to know that style and matter can no more be dissociated than skin and bone; but if we write clumsily, loosely, or disjointedly our thoughts are accordingly."

At a special meeting of the council of the Medico-Legal Society recently held, the following decisions were arrived at: (1) To suspend the ordinary meetings of the society for the time being, but to review the situation from time to time in the hope that it may be found possible to hold occasional meetings or to resume the normal activities of the society. (2) To cancel the annual dinner which was to have been held in December next. (3) To continue the publication of the *Review* and the annual subscription of £1 1s. until the end of 1940, both these matters to be again reviewed before the expiration of that period. An emergency committee has been appointed with all the powers of the council and with power to add to its number from members of the council.

Correspondence

Anaesthesia in War Time

SIR,—Your leader on anaesthesia in war time (*Journal*, November 11, p. 958) must appeal to all practical anaesthetists, and more so to those specialists who have been teaching postgraduates and students since the last war. You do not, however, stress one fact—the difference between work at the base hospitals and that near the front. The former should be similar to that in the general hospitals in ordinary civil life, and can easily be disposed of by appointing a specialist anaesthetist to, say, every 500 beds, with several juniors to help him. Even so, it is possible to criticize some of the arrangements at these improvised hospitals in such matters as uncovered exits from the theatres, the complicated apparatus provided, and the enormous cylinders of gas and oxygen (potential bombs).

At the front anaesthesia must be different. Conditions prevent the storage of innumerable cylinders of explosive gases. The wounded are shocked but have not suffered from prolonged sepsis and interference with their carbohydrate diet, and are generally heavily doped with morphine; such cases are notoriously easy to anaesthetize, requiring but little anaesthetic to produce the light anaesthesia which is all that is necessary. Such an anaesthesia is easily obtained by ether or chloroform on an open mask, or by air blown through a couple of Junker or Boyle's bottles in tandem containing ether and chloroform. A steady stream of air can easily be obtained by hand or foot bellows attached to a net-covered rubber bag inflated against pressure. Air as a vehicle for ether and chloroform is not so good as N_2O and O_2, but is very efficient, easily used, and safe.

As you so pertinently remark, everyone attempting to give anaesthetics nowadays should possess and be able to use his own bronchoscope. Ether, or even chloroform, and air without positive pressure are easily given by the intratracheal route with very simple apparatus and without the use of cylinders. These remarks are not intended to apply to those special C.C.S. which came into existence before the end of the last war dealing with abdominal, chest, or head work; specially skilled anaesthetists should be attached to these, and they will each have their own methods of dealing with such work.

Avertin is portable and easy to prepare and use. Very little ether is required to produce anaesthesia, but it requires experience to obtain the best results after the use of opiates.

A word of warning about the intravenous barbiturates: some of them contain sulphur; many of the septic cases will be given prontosil or sulphapyridine; as everyone knows, these compounds and sulphur are incompatible, but the presence of sulphur in some barbiturates is not so generally understood.

Your article is full of common sense and will be read with satisfaction by many who, like myself, are not afraid to use chloroform under war conditions, or, indeed, in the comparatively few suitable cases at all times.—I am, etc.,

London, W.1, Nov. 14. Z. MENNELL.

SIR,—As much of my time during the last war was devoted to the administration of anaesthetics I have been greatly interested by the leading article on anaesthesia in war time in the *Journal*. The article raises many points of interest and some issues to which the immediate attention of the profession should be drawn. May I briefly discuss the issues raised as they occur.

1. If a general practitioner is to be called to a work whose scope is far beyond his peace-time duties he should so prepare himself that his anaesthesia is both safe and good; if he cannot get immediate practical experience he should at least in spare moments study some not-too-bulky book upon anaesthetic practice and the modifying physiological forces of anaesthesia and the nature of anaesthetic drugs.

2. How far modern refinements in apparatus are superior to the anaesthetic equipment of 1914–18 I do not know, but

the technique of anaesthesia must still be much the same, and ether, either open or closed, must still be regarded as the method of choice, removing the fear of primary syncope, secondary syncope, and reflex syncope

3. I believe the dangers of chloroform, though really true, have been exaggerated partly owing to very faulty administration, especially during the early stages of induction—how often one has seen this drug literally "poured" on to the mask! But in view of possible civilian casualties we must remember that it is still the anaesthetic of choice in children under the age of 6 years.

4. The disfavour shown nowadays towards C_2E_3 is rather curious in view of its suitability for children between the ages of 6 and 10 years, for old people, and the powerful or alcoholic subject who responds so badly to open ether.

5. In the use of anaesthesia in cases of shock no mention is made of what used to be taught as a highly satisfactory method of induction—namely, closed ether.

6 A point which might be kept in mind, especially in connexion with first-aid posts, is the highly explosive nature of ether and the importance of avoiding the presence of a naked light or flame, especially in these sand-bagged days.

7. Closed ether given from a Hewitt inhaler seems to me as safe as any anaesthetic could possibly be if properly given—an item to be remembered in connexion with first-aid posts.

8. I wish that all who teach and demonstrate the science of anaesthetics would put up three large "N.B.s"—namely, (*a*) remember the significance of and difference between the conjunctival and corneal reflexes; (*b*) remember the importance of air in all anaesthetics; and (*c*) never forget the evil of conversation and a mind astray.—I am, etc.,

AUSTIN PRIESTMAN,
Medical Officer of Health and
School Medical Officer.

Folkestone, Nov. 14.

SIR,—The reading of your leading article on anaesthesia in war time in the *Journal* of November 11 (p. 958) recalls to my mind a simple, agreeable, and relatively safe method of administration of a chloroform-ether mixture that I was in the habit of using frequently many years ago. It was originally introduced into this country, I believe, by Dr. W. J. McCardie of Birmingham. The principle is as follows. Into an ordinary Clover's inhaler is poured a mixture of 1 part by volume of chloroform to 2 parts of ether. A rubber bag can be used for a short time during the period of induction only. The strength of the mixture is controlled solely by the rotation of the cylinder, and the face-piece is not removed at all during the operation except for necessary refilling. There is no rebreathing and coughing is reduced to a minimum.—I am, etc.,

Guildford, Nov. 16. H. F. PARKER.

SIR,—In view of recent correspondence on the danger of chloroform anaesthesia and of your leader in the *Journal*, it may be of interest to note the all-inclusive statistics of deaths under anaesthetics contained in the Annual Reports of the Registrar-General for Scotland. In that for 1936, Table 30, page xciii, the following figures are given:

DEATHS UNDER ANAESTHETICS (SECONDARY CAUSE)

Ether alone 35, in various combinations 34	= 69
Chloroform and ether 30, in various combinations 1	= 31
Chloroform alone 14, in various combinations 2	= 16
All other anaesthetics—volatile, local, basal, etc.	= 49
Total	165

Regarded superficially these figures do not seem to justify the claims made for the safety of ether and the danger of chloroform. Exact analysis is, of course, impossible in the absence of knowledge of the frequency of administration of different anaesthetics and of the selection of anaesthetics for types of patients or of cases.

The reports for the years 1931–6 show little variation in the total number of deaths from anaesthetics, but indicate that deaths from chloroform have tended to fall while those from ether have tended to rise. Presumably this has resulted from a less frequent use of chloroform and a more frequent use of ether. If this is true, however, it would indicate that the chief factor in deaths under anaesthesia is not the choice of the anaesthetic but the type of illness and of patient.

Perhaps some of the anaesthetists or "the detached observer" of your leading article would care to comment on these figures.—I am, etc.,

Loanhead, Midlothian, Nov. 13. W. HAMILTON.

Treatment of Gas Gangrene

SIR,—In an interesting letter (*Journal*, November 11, p. 973) Mr. W. A. Cochrane refers to the value of radiographs in the diagnosis of gas gangrene. I should like to call attention to the beautiful photographs by Dr. Agnes Savill and Miss Vera Collum which illustrate a paper I read in the Section of Surgery of the Royal Society of Medicine on December 13, 1916 (*Proc. roy. Soc. Med.*, 1917, **10**, 29). The paper was based on an analysis of 107 cases of gas gangrene, of which a large number came from the battle of the Somme on July 2, 1916. In it I made the observation that some help in coming to a decision as to treatment might be obtained from a minute study of the *x*-ray plate; and commented on the advisability of treatment by incision in early cases and by excision of an affected muscle when necessary, amputation being reserved for mass gangrene. Thanks to the kind co-operation of Dr. Weinberg and M. Séguin of the Pasteur Institute I was able to employ a potent polyvalent serum (*B. perfringens, Vibrion septique, B. oedematiens*) in some cases with strikingly successful results. It happened sometimes, however, that after the gangrene organisms had disappeared death took place from streptococcal infection. It seems probable that had sulphapyridine (M & B 693) been then available a fatal issue in these cases might have been averted.

In the diagnosis of gas gangrene the characteristic putrid odour is unmistakable, and has since enabled me to recognize the presence of a gas infection in a neglected maternity case. In a typical case progressing to a fatal termination the lemon-yellow coloration of the skin, a subnormal temperature, haemorrhagic vomiting, and dyspnoea are present. The patient may talk naturally, eat well, and is generally conscious almost to the end.

May I make a strong protest against the plaster-of-Paris treatment of infected wounds suggested by Dr. Trueta. Some of the very worst cases I had under my care had been encased in plaster-of-Paris, and arrived with the swollen tissues bulging above the plaster. Any pressure should be avoided, and the one flaw in the Thomas splint lies in the pressure from the shoulder or thigh ring.—I am, etc.,

FRANCES IVENS-KNOWLES.

Killagorden, Cornwall, Nov. 15.

Gas Injuries to the Eye

SIR,—I welcome Dr. Redmond Roche's letter in your issue of November 18 (p. 1019) relating to my correspondence on the above subject which appeared in the *Journal* of November 11 (p. 972). It gives me an opportunity to clarify the confusion that apparently exists in the minds of many regarding this subject, and which is so clearly reflected by the nature of Dr. Roche's letter.

First, a clear differentiation must be made between immediate treatment and that of the established injury. This letter is concerned solely with immediate treatment, and under active service conditions.

Secondly, it must be presumed that correspondents on the subject possess an elementary knowledge of the properties and action of mustard gas. The confusion which apparently has arisen is due, I feel sure, to lack of knowledge of the fundamental principles involved. It is manifestly impossible in the space of your correspondence columns to deal with the subject at any length. I will, however, outline a few of the salient features of a mustard-gas lesion of the eye, so that it may be easy to understand the rationale of the treatment advocated.

Very briefly, mustard gas is a liquid which volatilizes slowly. It is a cell poison, local in its action, and is absorbed into the lipoid of the tissues with *extreme* rapidity. In so far as the cells of the cornea are concerned the action of this gas may be described as instantaneous—a statement which is based on the following experimental findings. If drops of liquid mustard gas are simultaneously placed on the cornea of both eyes of an animal and one eye is immediately thoroughly irrigated, with everything to hand under the most advantageous conditions to carry out "first aid," while the other eye is left for Nature to deal with, the lesions of the cornea in both eyes, when examined macroscopically the next day, are indistinguishable from each other. Histological changes have been shown to occur within a very short space of time after contact, and progressively develop. This progressive development of the lesion is one of the features of the gas and consequently makes it such a valuable chemical warfare agent. When we are able to defeat this subtle action and prevent a lesion developing mustard gas will cease to be used in war.

Other points which require particular emphasis are the period of delay which always occurs before the injury becomes evident and the absence of pain during this period. The actual latent period will depend mostly on the concentration of the gas and the duration of exposure. Lack of appreciating this peculiar action has, perhaps, led many to suggest a line of treatment who with a deeper knowledge of the subject would not otherwise have done so. Research workers all over the world have been assiduously studying the problem of the immediate treatment of mustard-gas lesions for years. Many avenues have been explored and it is hoped that this work will continue, but so far no therapeutic agent has been discovered that will counteract the action of the gas on the delicate tissues of the eye once the cells have been penetrated. There is no first-aid treatment that can compete with Nature's rapid and complete removal of unabsorbed mustard gas—reflex action of the lids and immediate flow of tears—as shown by laboratory experiments. Further, no therapeutic agent will influence the development of a lesion in those cells of the cornea already affected. The damaged tissues are devitalized, which is another prominent feature of the poisoning.

For these reasons immediate treatment must be palliative. It should be aimed at allaying irritation ("suicidal pain," Dr. Roche might note, is not a feature of a mustard-gas injury), counteracting spasm, and above all preventing septic invasion of the devitalized tissue. This may best be achieved by the use of perfectly bland sterile lotions and, following this, the instillation of a drop of sterile liquid paraffin to prevent the lids sticking together and so to permit free drainage from the eye.

Dr. Roche will find this treatment, together with the points I have outlined, detailed in all the official manuals on the subject, and also in my article in the *British Encyclopaedia of Medical Practice,* vol. **5**. Greater detail in so far as the eye is concerned is discussed in an article by me in *Modern Trends in Ophthalmology,* which is at present in the press. Publication of this latter book has been delayed owing to the war, but reference to my article, and in particular to the experimental findings mentioned above, was made by Mr. Arnold Sorsby in a paper which he read in opening a discussion in the Section of Ophthalmology at the B.M.A. meeting held at Aberdeen this year.—I am, etc.,

War Office (A.M.D.7),
Nov. 17. L. T. POOLE.

SIR,—Considering the importance of mustard gas in the event of aerial activity, it is surprising that no attempt seems to have been made to obtain a "pool" of experience in this devastating injury. It would appear advisable to issue definite instructions as to treatment in order, at least, to prevent further damage from unwise interference. I would like information from those who have treated many cases regarding the following points:

1. Lavage by saline, sodium bicarbonate solution, and similar lotions is only possible at an early stage before swelling. Even so, how can it remove an oily liquid? Surely the only fluid capable of removing any excess must itself be oily. Irrigation has been impossible in the few cases I have seen, but these were not early. Surely irrigation increases spasm.

2. For spasm and pain sterile atropine appears useful. Should it be a routine? If so, between which ages?

3. Cocaine appears contraindicated entirely. What of holocain and similar drugs?

4. Dionin would appear ideal considering the hyperaemia produced by it and the tremendous devitalizing action of mustard gas, but many patients complain bitterly of the irritating burning pain following instillation of dionin.

5. Should ointment be used? Does it hold up secretions or not? The only agreed fact appears that bandaging is undesirable. Surely it is advisable to have some really authoritative teaching on these points in place of theoretical discussions. Can't we do anything for the pain?

Dr. A. Francis's experience (*Journal,* November 11, p. 972) with "dielectric oil" is most suggestive, while Professor J. H. Burn's information (November 11, p. 972) regarding the use of cod-liver oil by the German Army Medical Service is surely indicative of German thoroughness. If we have anything definite as the result of our own research it would be interesting and useful to have it made available for all.

So far official instructions in the publications I have read seem more in the form of vague suggestions, tending to imply that eye injuries from enemy action in the air are of slight importance. At the present moment symptoms are still arising from mustard gas of the last war. It must be remembered that any irritation produced may subside for nearly half an hour before the acute inflammation begins. What can be done in this important latent stage?—I am, etc.,

Lytham St. Annes, Nov. 11. WILLIAM WILSON.

SIR,—In the absence of any indication that either oils or salines neutralize mustard gas, their relative merits would seem to be a biophysical problem. From this viewpoint it would be interesting to know whether osmotic influences can affect the movement of a substance which is in solution in the tissue lipoids; and, similarly, whether the application of, say, castor oil will result in the transference of lipoid-dissolved substances from the tissues to the castor oil. If this latter possibility were true, irrigation of the conjunctiva with oils would be indicated.—I am, etc.,

Nov. 13. R. B. TERRY.

Fatal Pulmonary Embolism in Fractured Neck of Femur

SIR,—In connexion with the excellent article on fractures of the neck of the femur by Mr. Philip Wiles (*Journal,* November 4, p. 920), I would draw attention to five fatal cases of proved pulmonary embolism from treatment of basal and trochanteric fractures in old and elderly female subjects which have come under my notice in the last two years. In these subjects the complication took place in the usual types of basal and trochanteric fractures—that is, in those with lateral rotational displacement of the distal fragment and in the comminuted impacted type.

In considering how this condition of embolism might have been anticipated and prevented in these cases, one feature of significance appears to have been that treatment was undertaken about the same time in each case—namely, a week to ten days after the accident. If a thrombus is present, this seems to be the dangerous period for dislodgment. Two of the fatalities actually occurred in the operating theatre before any attempt to administer an anaesthetic or to reduce the fracture had been made. Both patients complained of breathlessness and of a feeling of restlessness and oppression on the way from the ward to the theatre, death taking place in a few minutes after being lifted from the trolley to the table. The other three patients all died a few minutes after gentle reduction of the fracture under a general anaesthetic while the surgeon was waiting to inspect the post-reduction films prior to immobilizing the limb.

At necropsy the damage to the bone, the extent of the extra-osseous injury, and the size of the haemorrhages which had taken place were far greater than might have been imagined probable or possible. Thrombosis of the circumflex veins was present and extended into the femoral and external iliac veins. The lifting of two of the patients out of bed and then removal to the theatre was enough in itself, therefore, to cause the condition of fatal pulmonary embolism.

It should be emphasized that all the cases were in elderly and old women of 65 years and over. In these cases lifting and moving of the patient and/or the attempted manual reduction of the fracture are particularly dangerous at a period of a week or ten days following the accident. It may be submitted that, if interference is to be contemplated at all (and this point in itself must be carefully weighed in the individual case) in basal fractures occurring in the elderly, then it should be undertaken at once, before thrombosis has occurred, or only after some weeks, when danger of moving a thrombus is past. In the elderly, early gentle traction in a Thomas splint as described in the article, or in Jones's hip-abduction frame, would seem to be the safest method if, in spite of the risk, it is decided that displacement is to be corrected. I have no personal experience as to whether pulmonary embolism is a serious risk in the treatment of basal and trochanteric fractures occurring in the young or middle-aged adult.—I am, etc.,

Edinburgh, Nov. 8. W. A. Cochrane.

Treatment of Fractures

Sir,—I have read with interest Mr. R. Watson-Jones's letter on this subject (*Journal*, October 21, p. 826) and must agree with him that the method described by Professor Trueta for the treatment of infected fractures cannot be regarded as revolutionary. The principles of the treatment of infected fractures—excision, cleansing, drainage, non-interference with the wound, and immobilization of the limb—remain the same. The fact that a closed plaster cast is applied does not exclude drainage. I have been using Professor Trueta's method for about ten years, but have not had the opportunity of making observations on such a large scale. In some cases I cut a window in order that the superficial gauze covering of the wound can be changed to avoid the smell becoming too offensive. In spite of the window, healing of the wound and union of the fracture were never delayed. In my opinion the success of the treatment depends on proper immobilization of the limb and non-interference with the wound after the initial dressing.—I am, etc.,

London, W.1, Nov 14. E. Goldschmidt.

Traumatic Dislocation of Patella

Sir,—Having myself twice suffered from this very painful dislocation, the article by Mr. E. P. Brockman (*Journal*, November 11, p. 963) prompts me to relate my experiences, particularly as I find that there is very little information about it in the standard textbooks.

The first occasion on which it occurred was at school on the rifle range, and was due to a forcible rotation of the knee-joint while falling prone. I have very little recollection of the actual process of reduction, but remember that it was done in a sitting position. The second occasion was quite recent, and was due to tripping over a hassock in the dark. After two very painful and unsuccessful attempts at reduction in the recumbent position, my wife was able to reduce it quite easily by gentle extension on the foot accompanied by internal rotation, as soon as we realized that I had to sit up in order to relax the quadriceps. I found that the only way in which it was possible to sit up was to force myself up by pressing with both hands behind my back on the floor. Any attempt to sit up without using the hands of course makes matters worse by tightening the quadriceps, and is, moreover, exceedingly painful.

It is my impression that a great deal of the pain in this dislocation is caused by quite understandable attempts on the part of the patient to sit up to reach his injured knee, and in part also by external rotation of the tibia on the femur from the pull of the displaced patellar tendon. This pain is quite sickening, and similar, I imagine, to that experienced in injuries to the menisci, and is possibly caused in the same way, under the stress of the rotation.—I am, etc.,

Wivenhoe, Essex, Nov. 11. Walter Radcliffe.

A Drop-wrist Splint

Sir,—Mr. John Sainsbury, in his letter in your issue of November 18 (p. 1021), wastes his time in criticizing one of the illustrations to my short article in the *British Medical Journal* of November 4 (p. 914). I admit it would have been better to have shown the apparatus fixed to a case of drop-wrist, but the photograph was taken quite recently and no such case was available at the moment. Therefore a normal subject was used and happens to have taken a very energetic hold of the end of the splint. The illustration was meant to show only the method of fastening the splint and not the poise of a paralysed wrist. I think this is indicated in the letterpress.

In actual application to a crippled hand the bases of the middle phalanges rest on the wooden roller, the essential elevation of the first phalanges being thus provided, while the fingers remain only slightly curved as in the normal position of rest. Anyway, the proof of a splint is in the wearing thereof, and this splint was found to be efficient, comfortable, and economical in nearly a hundred cases at Summerdown and the adjacent Officers' Convalescent Hospital, and met with success also at many other centres.—I am, etc.,

J. S. Kellett Smith,
Cheltenham, Nov. 18. F.R.C.S., D.M.R.E.

Treatment of Varicose Ulcers

Sir,—There being a considerable vogue for the treatment of varicose ulcers by occlusive dressings, the following experience of mine (albeit that of a humble general practitioner) may be of interest in seeming to indicate that this method may have its disadvantages (in any case the damming up of foul stinking discharges seems to me to be unhygienic and repulsive).

The patient, a woman of 50 and weighing close on 15 stone, came under my care suffering from multiple varicose ulcers on both legs, which had been treated with strips of elastic adhesive bandage, each strip being just sufficient to cover the ulcer. She also told me that before using the strips her doctor had treated her by elastic adhesive bandages applied to the whole of the leg but without any improvement. When I saw her she was in bed and the ulcers were still covered with the occlusive strips. Both legs were reddened and oedematous and excessively tender. In the calf of the left leg was a fluctuating swelling from which a considerable quantity of pus was later evacuated. In addition she had a number of boils, one excessively large and painful being in the left axilla and another in the right groin. Her temperature was 101.5° F. No glycosuria. On removing the occlusive strips several ulcers were disclosed which showed no signs of healing but which exuded considerable quantities of foul-smelling pus. The ulcers were irrigated daily with "sanitas" fluid diluted 1 in 6 (later increased to 1 in 4) with alternate irrigations of warm hypertonic saline. The boils were treated by incision followed by fomentations with cataplasma kaolin. By the second day of treatment the temperature had fallen to normal and the redness and oedema of the legs had largely disappeared. In three more days the floors of the ulcers were covered with healthy granulations and thereafter healing was rapid. The abscess in the calf of the left leg, however, caused some trouble, necessitating incision under an anaesthetic and drainage, followed by packs of 1 in 1,000 flavine in normal saline. The considerable quantity of pus contained in the abscess yielded in culture an almost pure growth of *Staph. aureus*. The patient was thereupon given uleron—two tablets t.d.s. for five days—and the condition promptly cleared up, and she made a good recovery with complete healing of the leg ulcers.

The above experience seems to show that in treatment of varicose ulcers (especially if multiple) by occlusive dressings there is a definite risk of systemic infection and abscess formation from the damming up of septic discharges.—I am, etc.,

Leamington Spa, Nov. 6. J. R. A. Davies.

Use of Radium in War Time

SIR,—I have read with much interest the article on "The Use of Radium in War Time" in your issue of November 11. The authors certainly go far to show the ultimate grave danger to life from the retention in the system of exceedingly minute quantities of radium. In support of their views they give a considerable number of references. On analysis one finds that these refer to workers who have been employed for years in occupations in which they habitually used radium, particularly those who licked brushes in order to point them in the painting of luminous dials, etc., or to injections direct into the circulation. The excretion of radium is also considered and is apparently rapid, though not complete, as a certain degree of radio-activity persists.

The facts as stated are not in dispute, but exception must be taken to the assumption that the conditions of the cited clinical and experimental work are in any way comparable to those that would be produced if a bomb made a direct hit in which radium was involved. In these conditions those who were immediately around the radium would suffer the same dispersal as the radium. For the survivors, if any, it would be a case of one and only one dusting; a very different risk to the daily exposure of occupation or the actual injection of radium into the blood stream.

In the quoted literature there is an instance of a physicist being powdered by the explosion of some radium, but there is no record that he suffered ill effects from this extremely severe dusting.* Probably nobody was so exposed to the radium risk as Madame Curie in her primitive draughty workshop with its leaky roof and smoky stove, yet she lived for thirty-six years after the discovery.

Are there no records of people showing changes in the bones or dying from aplastic anaemia, other than those employed in radium work, to support the view that radium scattered into the air by direct hit would be such a frightful menace to all around? Can no records be produced of the deaths of surgeons who have inadvertently damaged or broken needles in the course of their work? Are there no instances of deaths among those who have searched the ashes of incinerators or who have dug the city refuse heaps to recover lost and often much-damaged needles? To the best of my knowledge no such records exist. The assumption, therefore, that the references quoted have any direct bearing on the problem of the use of radium in war time seems to me to be unjustified by experience.

Nobody would doubt that the hiding away of large quantities of radium, especially in soluble form, is expedient if only because of its intrinsic value; but for relatively small quantities that might be dispersed into the air from a direct hit on needles or plaques the danger to life seems more hypothetical than real, especially if we allow for the fact that the lungs are capable of eliminating practically the whole of the inhaled dust within a relatively short time. The chances of the retention of a particle of radium dust from one dusting must be exceedingly remote.

I asked an authority on shells what were the chances of a direct hit on a source of radium if a given area was being bombed from the air. He ventured a figure in the neighbourhood of 1 in 5 million. Suppose that, with this remote chance of a direct hit in mind, a number of needles were actually disintegrated, again bearing in mind the improbability of the destruction of such light yet strong little tubes as radium needles. What would be the dilution of the radium in the dust at a distance compatible with the survival of any who happened to breathe it? How much of this contaminated atmosphere would they breathe before they fled out of it or before the dust settled? If this series of probabilities was expressed in figures the danger to life would be so infinitesimal that it would not be worthy of a moment's consideration as a war risk.

The conception that the contaminated site would become untenable for all time seems to me to be unjustifiable; doubtless this would be so as regards delicate scientific apparatus, but as a risk to human life it is quite a different matter. In mining for radium there appears to be a definite risk to workers that ultimately leads to a percentage of deaths from pulmonary disease, but a contaminated area from a bomb explosion would contain so little radium that it would not be worth disturbing by mining. Moreover, a "clucking hen" (Müller Geiger counter) would quickly determine the presence of any concentration that was worth attention. If grass was grown over the contaminated area it would prevent the possibility of dust.

The danger of *irradiation* from radium diffused over a wide area is one that could easily be assessed by measurement. We know that radiations are subject to the inverse square law, and surely the danger from this source must be fantastically remote. I am told that under a housing estate there is a quantity of radium in the dump on which it is built, and in one of the western cities of the U.S.A. there is a concrete-pavement in which a relatively large quantity of radium lies buried. No known ill effects have occurred from these sources of potential danger.

While accepting that radium, if it becomes fixed in the system even in minute quantities, may be a source of danger to life, it seems to me that the risks from war conditions in this respect are not based on foundations that justify the precautions (and consequent disuse of radium) that have been in force since the outbreak of war.—I am, etc.,

Oxford, Nov. 17. A. E. B.

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* Since writing the above I have learned that this man, constantly employed in radium work, died about five to six years later.—A. E. B.

Prophylaxis of Influenza and Cancer

SIR,—The value of any of the multiplicity of remedies recommended for the prophylaxis of influenza and colds could be judged better if administered well before the expected peaks of outbreaks and epidemics, as some weeks are needed before any rise of immunity can be produced by prophylactic agents.

Owing to one group of my cancer patients showing the first signs of primary or recurrent malignant disease a few weeks after influenzal attacks I have recently made a new study of the series of influenzal epidemics and outbreaks since 1890, and have suggested that a two-phase modification of Brownlee's theory can account for all the phenomena of influenzal waves.[1] In recent years the peaks of the waves have been in February, June, and October (though they may show before long a backward drift, as has been traced in the years just after the last war). As the peaks are usually preceded by some weeks of rising death rates, practitioners who intend to try any of the remedies advocated should begin their tests soon, before the expected January rise starts.

There is on the market now at least one influenzal virus vaccine, combined with catarrhal vaccines (Parke, Davis and Co.), and results with this and similar virus brands will be of great interest. Also Shope's studies of swine influenza in the United States[2] showed that considerable protection was given by heat-killed vaccines of the bacilli which had been found associated with the virus; so some immunity might be expected to result in patients from some of the brands of catarrhal vaccines *when administered at the most effective time*. The latter proviso has been lacking in a number of the tests made with bacterial vaccines.

In addition to virus and catarrhal vaccines other remedies may be given with the aim of raising immunity; one of the best attested of these so far is serocalcin, which has been under clinical trial for six years.[3] A month's trial of this remedy is said to give a four-months immunity to influenza and "colds." Certain vitamin products and ultra-violet ray treatments also are among those which have a probable immunizing value.

The similarity in the periodicities of influenza and cancer which I have traced[4] is of the greatest interest to theory and practice: it supports the virus theory of cancer: and in the attempts to prevent cancer recurrences, in addition to radiotherapy given beforehand to sites likely to show recurrences, the effects of influenzal virus and bacterial vaccines, and other possibly immunizing measures, are being tested.

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[1] *Edinb. med. J.*, 1939, 46, 591.
[2] *J. exp. Med.*, 1937, 66, 169.
[3] G. Tippett and MacLeod Yearsley, *Med. Pr.*, 1939, 202, 254.
[4] *Brit. J. Surg.*, 1938, 26, 113.

The relation between influenza and cancer has been found lately not to be confined to the clinical group already mentioned, in which recurrences (or a primary) followed a few weeks after influenzal attacks, but my analysis of the dates of recurrences in any given year has shown that a great proportion of these have run concurrently with, or a few weeks after, the influenzal "periods," as detailed in the paper on influenzal periodicity.[1] This is a very interesting and unexpected finding, suggesting that the relation between the influenzal and the neoplastic viruses may be quite a close one. It suggests that efficient prophylactic measures for cancer, as for influenza, may be not long delayed.—I am, etc.,

London, W.1, Nov. 18. J. H. DOUGLAS WEBSTER.

Cancer and Pernicious Anaemia

SIR,—I endeavoured in a letter to the *Journal* of June 16, 1934, to expound a theory of cancer based on the supposition that it is a deficiency disease.

Since 1934 no real evidence has come to light that cancer is due to virus infection. Much time and money have been spent on this line of investigation. To my mind a drive should be made along new lines, and I would like one new line to be that cancer is caused by a deficiency in the body of the person attacked by this disease, and that in all probability the deficiency is of a substance that is essential to the normal formation of a certain type of cell. Also that this substance, "*x*," may become "fixed" from time to time in single cells, and that if and when this substance is used up by that cell and there is no further supply forthcoming, that cell will die. In order to prevent its death this cell starts reproducing.

By way of support for my theory I would suggest that pernicious anaemia is a form of cancer. If pernicious anaemia is a cancer then we are well on the way to discover a substance that will control each and every individual type of cancer severally. We can control pernicious anaemia, therefore we can control one type of cancer. All I can do now is to try to point out why I think that pernicious anaemia is a cancer. No doubt many will scoff at this suggestion, but before they do let them think of the cases of pernicious anaemia that died before liver treatment began and the clinical picture these cases used to present.

Now for the comparison between cancer generally, on the one hand, and cancer of the marrow, or, as we know it now, pernicious anaemia, on the other.

Cancer	*Pernicious Anaemia*
1. Hereditary tendency.	Both hereditary and familial tendency.
2. Cancer is a disease of the middle-aged or elderly, affecting the sexes about equally. It is sometimes met with in young adults and rarely in children.	Pernicious anaemia is a disease of late adult life and affects the sexes about equally, rather commoner in men than in women. It is sometimes met with in young adults and even rarely in children (Muir). Only 9 per cent. under age of 40.
3. Progressive and leads to fatal termination with remissions without any form of treatment.	Progressive and fatal with remissions without any form of treatment.
4. Prognosis very bad. Death ranging from six weeks from onset to over two years without treatment.	Prognosis very bad without treatment. Osler's opinion is that average life with remissions is one year.
5. Histologically the cells of cancer are directed to proliferation.	The cells of the marrow are directed to proliferation, although the blood picture has tended to mask this from our eyes in that the blood cells actually decrease in number.

Up to the present time the average worker on pernicious anaemia has concentrated on the blood picture as arrived at by blood count. The fact that there is diminution in the number of cells circulating in the blood tends to hide the fact that this is not really the true state of affairs as to the actual number of red cells, normal and abnormal, in the body as a whole. Now in the bone marrow there are important changes. The fatty marrow in the long bones and in the short bones is now all marrow of a dark red colour (this, of course, towards the termination of the disease). According to most writers on this subject this marrow contains not only gigantoblasts but megaloblasts and large numbers of erythroblasts. The whole change may be regarded as a marrow hyperplasia of megaloblastic type.

It has been said that this is a degeneration of cells, but I feel that this is really in the nature of an embryonic regeneration of cancer cells. These cells are imperfectly formed because they are lacking in the substance "*x*" and are undergoing rapid proliferation in search of it. They are easily destroyed on reaching the blood stream owing to their unstable form, and so we find the picture of anaemia and the deposits of iron in the various organs.

Considerable hyperplasia of marrow takes place in the confines of the bones, and the picture post mortem could quite easily be interpreted as a cancer of marrow.—I am, etc.,

Christchurch, Hants, Nov. 12. EDWARD F. HUNT.

Treatment of War Wounds

SIR,—The publication of Professor Trueta's admirable book has aroused wide interest and much criticism. The book, while emphasizing the necessity for well-recognized principles of rest to the bone and soft parts, opens a further line of thought. A point which struck me was Dr. Trueta's insistence on the use of dry gauze instead of vaseline pack, as in Winnett-Orr's method. Perhaps the importance of this minor detail can explain the better and more astounding results obtained. Vaseline by its viscid nature prevents the absorption of calcium from the plaster to the wound. Dr. Trueta quotes Kline, and has emphasized that the vicinity of the plaster should supply enough calcium. A condition of local excess of calcium is thus produced which has three effects: (1) it encourages the union of fracture; (2) it helps in the production of non-pyogenic bacteria which antagonize the pyogenic; and (3) it has a general wholesome effect.

As long ago as the last war (1914-18) Baer observed the beneficial effect of maggot therapy, which Stewart believed to be due to exudation by the maggots of calcium carbonate, and he recommended dressing wounds with this.—I am, etc.,

London, W.2, Nov. 12. B. B. BHATIA.

Vein-seeking

SIR,—I have read with interest Mr. F. Ronald Edwards's description of his "vein-seeker" in the *Journal* of November 11 (p. 957). Exactly the same effect can be obtained by the following method, which has the advantage that no special instruments at all are needed.

The needle, fitted to a sight-glass, is connected by rubber tubing to a drip-bulb and the whole filled with saline or citrate. The tubing is then closed by a screw clip about two inches away from the sight-glass, and the drip-bulb is connected to the bottle of blood. The rubber tubing between sight-glass and screw clip is then compressed in the same way as the rubber teat on Mr. Edwards's vein-seeker. The needle is inserted under the skin, the pressure on the tubing is released, and blood will be seen to enter the sight-glass as soon as the vein is entered.

If a second bottle of blood is needed the drip-bulb can easily be changed over to a new bottle. Intravenous anaesthetics or stimulants can be injected into the rubber connexion between sight-glass and drip-bulb.—I am, etc.,

GERHARD BEHR,
Medical Officer at St. Bartholomew's
Nov. 12. Hospital, Rochester.

Complement Preservation.—The addition of sodium chloride and boric acid to guinea-pig serum preserves its complement activity for as long as six months.—Studies on the Preservation of Active Constituents in Serum, with Special Reference to Complement: A Contribution to the Theory and Practice of the Complement-fixation Reaction. A. Germershausen.—*Z. ImmunForsch.*, June 1939, **96**, 1.

Medico-Legal

MEDICAL MAN CHARGED WITH WIFE-MURDER

Defence of "Dissociated Personality"

Verdict: "Guilty but Insane"

At Nottingham Assizes on November 16, 17, and 18, before Mr. Justice Singleton, Dr. Leonard Phipps Lockhart, of Beeston, aged 41, medical officer to a large industrial undertaking, was charged with the murder of his wife, Mary F. L. Lockhart, at their home on September 2. Dr. Lockhart was found guilty but insane, and was ordered to be detained during the King's pleasure.

Mr. P. E. Sandlands, K.C., and Mr. T. R. F. Butler appeared for the prosecution, and Serjeant A. M. Sullivan, K.C., and Mr. T. N. Winning for the defence.

The Facts of the Case

For the prosecution it was stated that on September 1, the day of the invasion of Poland, Dr. Lockhart and his wife, who were a devoted couple, were noticeably apprehensive about the war, the wife especially. That evening, to a friend who complained that his wireless set did not give good reception, Dr. Lockhart said, "You can have mine," and gave it to him. Next morning a manservant employed by Dr. Lockhart, on arriving at the house, was warned of gas, and found the doctor and his wife in the study lying near a gas fire. Mrs. Lockhart was dead and the doctor unconscious, but he recovered in hospital. An envelope was found giving directions to the servant about notifying the solicitor and other matters. On Mrs. Lockhart's arm was a puncture and in the bedroom a hypodermic syringe which had contained sodium evipan. A post-mortem examination of the woman's body showed that there was evipan in the liver. The necropsy also showed that death was due to carbon monoxide poisoning. There was no evidence of struggle or violence.

Evidence was given by Dr. A. Somerville of Beeston, who said that after the manservant's discovery he was summoned to the house and found that Mrs. Lockhart had then been dead for six or eight hours. Dr. Lockhart could not have been under the influence of the gas for very long, or he too would have died. In reply to a question, he said that he doubted very much whether a hypodermic injection could have been made other than with the consent or at least the knowledge of the woman. Dr. J. H. Donovan of Nottingham General Hospital said that on admission Dr. Lockhart was found to be suffering from carbon monoxide poisoning. On recovering consciousness he asked when his wife was coming to see him and was greatly distressed when later he was told that she was dead. He said that the last thing that he remembered was giving his wireless set to a neighbour. This witness in reply to a question said that he thought a healthy person might succumb to carbon monoxide from a gas fire in half an hour.

Case for the Defence

Serjeant Sullivan, in opening the case for the defence, said that it was for the prosecution to establish that the accused was guilty of murdering his wife, and, if so, that it was a conscious act. Mrs. Lockhart died as a result of carbon monoxide poisoning, but the case was confused by the fact that she had previously, with her own consent, received an injection of evipan at some time long enough before her death for it to circulate through the system and reach the liver. She did not die from the effects of the evipan, nor did the injection in any way accelerate her death.

There was evidence that both husband and wife went to bed on the night of September 1, but after that they did not act together, because the most significant factor in favour of the accused was that when Mrs. Lockhart was found she had been dead for some hours, whereas Dr. Lockhart was still living, although in a state of deep unconsciousness. This might be an attempted suicide by Dr. Lockhart, but there was no evidence of agreement to die together. It seemed probable that, Mrs. Lockhart's death having taken place about 1 a.m., Dr. Lockhart awoke at 7 a.m., and, finding his wife missing, went into the study, found her lying dead, and possibly tried to revive her and, failing to do so, attempted suicide.

If the accused was responsible for the death of his wife there arose for consideration in this case a mental or psychological phenomenon which presented difficulties of the most unusual kind. It was not a defence of insanity that he proposed to make; it was a defence of unconscious action, not arising from insanity at all. Some of the most eminent medical men in the field of psychiatry would be called to support this defence. The work of the accused necessarily brought him in contact with leading members of his own profession, and the expert evidence to be called would be given by those who knew him before this event occurred. Counsel went on to develop the argument for the existence of a condition in which the personality for a period long or short no longer controlled bodily actions—in which the automatic powers of the body were left in charge without any exercise of the personality. The appalling suffering and strain of the last war brought this condition of dissociation into prominence, but it was far more common than many people appreciated because it was only in a small proportion of cases of dissociated personality that any act of a startling or criminal nature was performed. In the great majority of cases of "fugue" the mechanical operation of the subordinated portion of the brain sufficed not only to keep the man alive but to carry him through operations even of an intricate kind with apparent intelligence and purpose and with nothing to suggest inadequate control.

The defendant's story began in August, 1918, when, while serving in the army, he suffered concussion from a bursting shell. While he was being lifted into an ambulance a blank came, and when next he remembered anything he was back in the tent where his company had been the night before the attack, and of what occurred between those two incidents he had no notion. A little later, still serving in the war, he had a similar experience, and afterwards, having taken up an appointment at the Royal Devon and Exeter Hospital, he again had a blank period, as a consequence of which he left and took up other work. When therefore his memory ceased to function on the night of September 1 it was an index, from previous experience, to a dissociation of personality. It was not the carbon monoxide poisoning which caused the lapse of memory; the lapse had already occurred. The defence therefore urged that a man whose mind was dissociated from his personality was not responsible for acts which he might perform mechanically; he was not insane, but unconscious, and even if it were found that he had terminated the life of his wife the verdict should be "Not guilty."

Dr. Lockhart's Evidence

Dr. Lockhart, in the witness box, described his experience in the great offensive of August, 1918, when his platoon, with the exception of himself and another, was wiped out. The last thing he remembered was being put on a stretcher and carried by German prisoners, and when he came to himself again he was in the assembly tent, with no recollection of how he had got there. On another occasion, while inspecting positions with his commanding officer, both of them got stuck in the mud, and again there occurred a total blank in his memory. In 1924 he was appointed resident medical officer at the Royal Devon and Exeter Hospital, and as part of his duties he had to administer anaesthetics. He had never given volatile anaesthetics by himself before, and he found his right hand trembling, and after that he could remember nothing else. On the advice of the senior physician of that hospital he decided to leave and go in for research work, not into active clinical practice; he was for a time at St. Thomas's Hospital and then became Delépine Research Fellow in Preventive Medicine and Bacteriology at the University of Manchester. Later he entered the employment of Boots Pure Drug Company to carry on bacteriological research and to look after the welfare of the staff, but the welfare work soon assumed prominence and he was responsible for a staff of about 22,000. His work was not domiciliary, but he co-operated with the workpeople's own practitioners. He was a member of a number of organizations connected with industrial medicine, and was also in charge of the medical side of the local A.R.P. He put his heart into his A.R.P. work, but was doubtful of his own adequacy.

After saying, in reply to a question, that his marriage was a perfectly happy one, Dr. Lockhart was questioned as to certain dispositions he had made in a letter to his manservant dated September 1. He said that both he and his wife had been concerned for the future welfare of this servant in the disintegration of social life which they feared might follow if war came. Explaining a phrase in a letter to the servant, "If anything should happen to us both . . .", Dr. Lockhart said that he was the only resident doctor in the part where he lived, and he and his wife, who was a V.A.D. nurse during the last war, intended to work together in the area, which was a vulnerable one. The manservant had served them very well, and they wished to make provision for him. On the same day that he wrote the letter to the manservant he posted an application for Membership of the Royal College of Physicians, his application being under the by-law which excused examination by putting in published work, and he wrote to his sponsors, Lord Dawson and Sir Arthur Hall, informing them that he had done so.

Dr. Lockhart then described the events of the fatal evening. It was not true that he made a gift to his neighbour of his wireless set. He lent it to him for the night. As he entered his house that evening he heard his wife call to him, but he remembered nothing more until he woke up in hospital puzzled by what turned out to be a blacked-out bedside lamp. He had no idea at all that he was connected with his wife's death. He was visited in prison by Dr. F. H. Brisby, medical officer of Leeds prison. There happened to be a faulty gas fire in the room where the interview took place, and some smell of gas. Dr. Brisby asked him whether he remembered on the night in question turning on the gas, and he replied that he did not, but after Dr. Brisby had left, thinking over his visit and the connexion between his remark and the smell of gas, he became disturbed, and an image began to arise in his mind of his wife's body, which was very cold and limp in his arms, and of a strong smell of gas. The images bore no relation in time or sequence to one another, but he also had the impression of the body lying somewhere in the attitude adopted by a patient who was being given an intravenous injection. This recovery of memory was associated with a feeling of terror that mutilation should have come to his wife as a result of war. He had an attack of convulsive sobbing, and Dr. Brisby was again sent for. He added that he had never at any time contemplated suicide, nor had his wife.

In cross-examination he was questioned as to the hospital incident in 1924, and he explained that although he felt he could not give volatile anaesthetics, it was not due to a shrinking from responsibility so much as to a great anxiety for the unconscious patient. It was suggested to him that the various documents he had left for the manservant betokened an extravagant precaution, but he said that they were prepared in view of war emergency, not with the purpose suggested by the prosecution, and that he was by habit of mind extremely cautious. He was responsible, for example, for a quarter of a million units of tetanus serum, and his precautions had to be extreme. Asked whether he remembered a tourniquet on his wife's arm, he said that he did not, but he recollected the hand being in the position which indicated that the tourniquet was there. A notice, "Keep out; gas (study). Fetch police." which was found by the manservant on arriving in the morning was not within his recollection; he could not recall either writing it or placing it in the hall. A previous witness, an air raid warden, had stated that Dr. Lockhart had visited his post twice on the night of September 1 to complain about lights; Dr. Lockhart said that he could remember only the earlier visit. With regard to the syringes, forceps, and other apparatus which were found, some of them on a stool in the bedroom, he said that these were part of the kit which he and Mrs. Lockhart had got together for an A.R.P. emergency bag.

Nurses' Evidence

Miss Matthews, nursing sister at the Royal Devon and Exeter Hospital, testified that she was at that hospital in 1924 when Dr. Lockhart was there, and she remembered that he told her he had a great dislike of giving anaesthetics. She heard that he was supposed to have had a mental collapse, and she did not see him afterwards. Miss Ellen Rabett, theatre sister at the same hospital, said that Dr. Lockhart gave anaesthetics on several occasions. One afternoon when he was doing so he complained of not feeling well and looked rather distraught. He agreed to her suggestion that he should go to his room. He had said on other occasions that he was not very certain of himself, and did not like the confinement of the theatre. On the day in question he was very much perturbed and did not seem to understand what he was doing. He had muddled the bottles in which the anaesthetics were kept.

Medical Evidence for the Defence

Dr. Millais Culpin, professor of medical industrial psychology in the University of London, said that he had known Dr. Lockhart for six or seven years. His opinion as to his responsibility for his acts on the night of September 1 was based on the assumption that he was speaking the truth as to his loss of memory.

"This is a condition with which I have previously been very familiar in the war in patients suffering from mental disturbance. They have been under great emotional stress, which they have resisted, and have reached a point at which the emotions overcame them and the ordinary stream of consciousness was suspended. In that condition they performed acts which were quite foreign to their ordinary personality, and when this period ceased they have had no recollection of it. That observation is based upon the fact that I use a particular technique which enables me to restore the memory for the period when their ordinary consciousness was suspended."

Asked whether the partial recovery of the memory as spoken of by Dr. Lockhart was confirmatory or contradictory of the witness's opinion, Professor Culpin said that his description fitted in precisely with what happened when memory was restored—the rush of emotions and ideas which had been shut aside hitherto now took possession of his consciousness. The period of suspended consciousness might in his experience last for hours or weeks, or even in a few cases for years.

What is it that carries him off?—Some urge which he had not previously allowed to take possession of his consciousness—some urge or set of emotions which he has hitherto excluded or tried to exclude.

Is the existence of such a condition rare or common?—It is more common than people think, even in civil life.

Much more frequent, you think, since the last war?—I have no means of comparison.

Have you seen a number of cases which you think are attributable to the war?—Yes, and some independently of the war.

Can such a condition come on gradually?—There may be premonitory warnings, but the victim would not appreciate or understand them as a rule, though his actions would indicate the approach of such an attack.

The witness said that he judged from what he had heard that the accused had a pretty bad shell shock, but the unusual feature about it was that he returned to his duty, whereas most men ran away. His attitude towards the administration of anaesthetics threw some light on the subject. With regard to the letter addressed to the manservant on September 1, if he had seen that letter, knowing the accused, he would have felt alarm, he would have felt that something was going to happen, but he would not have read into it the conscious intention to commit suicide. Asked by the judge whether he regarded the writing of the letter as showing that Dr. Lockhart was not in his normal state through strain or illness, he said that he did; it was the letter of a man who had no clear idea what was in front of him. The fact that on the same day as the letter to the manservant he had applied for the M.R.C.P. substantiated his opinion; the application was the act of an ordinary healthy man looking forward to the future. Professor Culpin was asked whether in the condition he had described the man would be capable of forming an intention to kill his wife, and replied that he would find himself doing it without thinking about it

Would he be capable of forming a judgment as to the propriety of his action?—He would not think of it.

The judge said that the question was not answered, and after a pause the witness said that it was difficult to answer, but he could picture something taking place almost automatically, the bodily action being controlled by the set of emotions and ideas which had taken possession of his consciousness.

In cross-examination the witness was pressed as to what proof there was that a man who said he could not remember events was speaking the truth. He said that he had been doing this work for years, and it was his business to know whether the emotional reactions were genuine or not. If they were genuine, it was a proof to him that the forgetting was also genuine. Asked to explain a phrase he had used, "the reason was in abeyance," he said that it was another way of expressing the fact that other emotions and ideas had taken possession of the consciousness to the exclusion of reason. There were many forms of this separation of consciousness, of which somnambulism was one.

The judge asked about the significance of the note which was left in the hall, giving warning of gas.

If it be written by one who had anything to do with the turning on of the gas it shows a complete association of ideas?—It shows that that part of him did realize that something had happened.

There was something which was dangerous, so that if he is prepared to be responsible for it he is seeking to warn others of the danger?—Yes.

It is not quite a dissociation of ideas; it points to a desire to protect other people coming to the house?—I agree, and I could not account for it. It does point to a stage in which he realized something.

Some memory?—Yes, of the outside world.

The witness said that it was well known that Dr. Lockhart was a man of great scruple, and it was possible that at this stage the good part of him took possession once more. The judge also asked whether, on discovering his wife dead in such circumstances, the natural thing would be to run for help. The witness replied "No," and recounted his first interview with the accused, when he asked him what were the worst things he remembered in the war, and he replied, "Boys on barbed wire having their guts shot out." At the second interview he spoke of the stress of the "bloody A.R.P.," imagining countless situations and problems. In the recovery of memory there came a sense of terror lest mutilation should happen to his wife, and the night following recovery he had dreams of his wife and of war and mutilation. He judged that the accused's mind was occupied with a terrible fear, and it was under that fear that he did what he did.

Dr. R. D. Gillespie, physician for psychological medicine at Guy's Hospital, said that he saw Dr. Lockhart in Lincoln prison three weeks previously. If the evidence given in court as to loss of memory and the incidents in the Army and at Exeter were accepted, he would conclude that on the night of the tragedy the accused was in a dissociated state, by which he meant that there was a break in the continuity of his consciousness. While people were in that condition they were capable of purposeful acts of an elaborate nature. In most cases the persons affected went through life without doing anything abnormal, judged by ordinary standards. On the evidence given he considered that the accused was a person susceptible to this peculiar mental state. Asked whether there was anything in the nature of mind disease involved, he said that it was a type of mental disorder; memory and judgment were for the time being seriously impaired or in abeyance, though some kind of will prevailed, otherwise no action could be carried out. The warning note against gas was a difficulty, but probably there was not always a complete break in continuity between the normal and abnormal states: the note might have been written during an interval of consciousness, and the subsequent forgetfulness was not against that hypothesis.

Dr. J. R. Rees, director of the Tavistock Clinic, and at present consultant for psychological medicine to the Army, had known the accused for some years as an eminent man in his own branch of medicine. He had always thought him to be a tense and highly strung person, inclined to be carried away by ideas. He accepted what the accused said as to his loss of memory, and he formed the opinion that at the time of the tragedy he was in a mentally dissociated state. Personality in such a condition might be completely or partially altered. Criminal characteristics appeared in only a small percentage of cases. On cross-examination Dr. Rees said that before loss of memory there must have been a period of strain and tension, and to Mr. Sandlands's suggestion that strain and tension were common to many people at that time Dr. Rees retorted that breakdown was common too; he himself had had two cases in one day.

Apart from that common strain, the only thing that really affects you is that the acts complained of were inconsistent with the normal character of the accused?—Yes, I agree.

Lord Dawson's Evidence

Viscount Dawson of Penn testified that he had known the accused personally for two or three years, and for a longer time by reputation, and had had an opportunity of forming an opinion as to his character and capacity. Dr. Lockhart had served on the Medical Committee of the National Fitness Council. He was a man highly intelligent and full of enthusiasm, speaking sometimes almost with a religious fervour and having to be called back to deal with the details of the moment. Lord Dawson had formed his opinion on the case from the history as given in the witness-box and from a visit to the accused in Lincoln prison. Every physician knew how difficult it was to evaluate what a person had to say about himself, and doctors acquired considerable skill in judging the accuracy of such statements. He had taken a good deal of trouble to find out how far Dr. Lockhart's memory was affected, and he came to the conclusion that his memory of the essential parts of this tragic incident was lacking. With regard to the letter to the manservant, considering Dr. Lockhart's morbidly over-anxious temperament, which moved quickly from anxiety to terror, and from terror to imbalance, he was not convinced that he remembered that letter very well. He judged him to be suffering from dissociation between the higher and the lower levels of the brain. The accused conformed to a type well known to those who had made a study of automatic states. The patients were mostly people who performed foolish, sometimes insane, acts; it was only a minority who were guilty of anti-social conduct. Asked what he meant by an automatic act, Lord Dawson replied that he meant an act which was purposive, executive, and at times extraordinarily elaborate, but which took place without the person knowing what he was doing, and the memory of which, in most instances, did not persist. He would class the present among such cases, always remembering that it had a criminal implication. Asked whether Dr. Lockhart would realize the nature and quality of his action, Lord Dawson said that the higher levels of the brain were concerned with the greater part of the "knowingness," and without that "knowingness" he would not be able to evaluate what he was doing, nor would he have the power of choice, nor a proper control over his conduct, nor the means of knowing what his conduct should be.

In cross-examination Lord Dawson said that the executive side of the mind might remain intact while the "knowing" side might be suspended. Questioned as to the warning notice, he said that it might indicate a partial appreciation of what he was doing. In his judgment this lapse or abeyance of "knowingness" did not maintain a steady level; it would return and recede. The judge pointed out that the preparations for the anaesthetic must have been fairly considerable. Surely a man could not carry out all these details without knowing what he was doing? Lord Dawson admitted that the action was complicated, but such things had been known before. Dr. Lockhart had taken up evipan because he wished to avoid volatile anaesthetics, and had become adept in its use in his research work. The judge said that the prosecution had put forward the theory of a suicide pact. Would this mean that both parties were in a state of "unknowingness"? Lord Dawson replied that it was impossible to answer for the wife.

Evidence of Prison Medical Officers

Dr. F. H. Brisby, medical officer of Leeds prison, who was called by the prosecution at the request of the defence, said that he was asked to supplement the observations of the prison medical officer at Lincoln. He visited the accused on November 10 and 11. At the first interview the accused told him that he had completely lost his memory regarding the events on the evening of September 1 after he returned home and heard his wife calling him. At the second interview he told him that he had had in the interval what might be described as an emotional storm. From a remark which he (Dr. Brisby) had made, linked up with a smell of gas from a faulty stove in the room, he said that some memory had returned to him. His mind was in a complete turmoil, with terror predominating, and this terror was largely centred on the wife. Asked whether he noticed a change of demeanour between the first and second interviews Dr. Brisby said that the first time he saw Dr. Lockhart there was a distinct air of detachment about him and he discussed the case impersonally. On the next day there was a great change. As a result of the two interviews he formed the opinion that the accused was of an unstable type, and with acute apprehension and mental stress acting on his unstable mentality his mind on the night of September 1 became unhinged so that he would not know whether his acts were right or wrong. The judge asked the witness's view of the kind of loss of memory which had taken place, and he replied that he thought that an impression of a very painful nature had been received; something absolutely incompatible had happened, and he had simply blotted it out, not allowing it to enter his conscious field. This could only arise through the man's disordered state.

In cross-examination he agreed that states of dissociation were not uncommon, although anti-social acts in such states were rare. The normal dissociate behaved more or less like a normal man of low intelligence. In a state of dissociation a man might appear to be absolutely normal in his different personality or he might be an abnormal person and commit a crime. There were many degrees of dissociation, and it might be mass or transient.

Dr. F. E. Norris, medical officer of Lincoln prison, said that he had had Dr. Lockhart under his close observation since September 5. He agreed generally with Dr. Brisby's conclusions. The mechanism of dissociation was a matter of theory, and he did not agree entirely with the picture of dissociation drawn in this case. The impression had been given that the higher orders of the mind had been cut off from the lower, but his idea of what happened was that dissociation was not so much between the different levels of the mind as between the conception of the mind at all his levels and the associated ideas. He thought there was a narrowing of consciousness rather than a cutting off of the higher consciousness. He agreed that the present was a typical case of its kind, that the emotional storm was genuine, and that the accused would not be able to exercise judgment as to right and wrong.

Counsel's Closing Speeches

Serjeant Sullivan, in his closing speech for the accused, said that although this case had presented an interesting problem to the medical world, there was no proof that this man had anything to do with the termination of the life of his wife. It was only on that assumption that the medical evidence became important. Insanity meant that a man had a perverted memory and judgment, and that, instead of appreciating the true nature and quality of his acts, he might conclude that an act which was utterly wrong by all proper standards was an act of virtue. The defence in this case was that the personality of the accused was not operating at all during the period in question; there was no vicious operation of memory, judgment, or will; these were suspended for the time being. There was a difference between having a mental judgment which operated in a wrong way and having no capacity for judgment at all; the one was insanity, and the other was unconsciousness of what was done. The same words and phrases had to be used to explain many gradations and differences in mental states. Assuming that the accused was found to have caused the death of his wife while in an unconscious state, he had now recovered his personality, and counsel suggested that the true view upon the medical testimony was that it was not his personality which had been acting at all, but an unconscious—or, to use Lord Dawson's word, an unknowing—series of actions, elaborate, purposeful, and apparently rational in the sense of being thought out. If that view were taken the verdict should be simply "Not guilty."

Mr. Sandlands, for the prosecution, said that facts had been brought forward from which no other inference could be drawn than that this unfortunate man was responsible for the death of his wife by administering an anaesthetic so that she should not know the terror of approaching death, and then turning on the gas fire and arranging a canopy over her head so that the gas should be inhaled. The preparation of the documents which were left for the manservant showed that the accused was fully conscious of what was being done. The court had been asked to believe that the letter to the manservant stating that, among other things, he could live in Dr. Lockhart's house had no connexion with the events of the fatal night, but surely it meant that some happening was contemplated which would leave the house intact although it might destroy the lives of Dr. and Mrs. Lockhart. Why was it that the documents were taken from the bag and put in the hall where the manservant could find them? Was this consistent with the idea of the suicide of Mrs. Lockhart and the horror-stricken husband finding her in the morning? From the evidence of the three psychologists it was clear that they thought the accused to be suffering from a disorder which made his reasoning powers so defective that he was incapable of appreciating the nature and quality of his act or, if he did appreciate it, that he was unaware that he was doing wrong. The two prison medical officers had said that dissociation was due to a mental disease, that he must have known what he was doing, but the control was by a diseased mind: it was not a case of absence of control but of wrong control, and he asked the jury to take the merciful view that at the time these acts were committed the unfortunate man did them because of defective reason due to disease of the mind.

The Summing-up

Mr. Justice Singleton began his summing-up, which occupied two and a half hours, by complimenting the prosecution and the defence on the fairness with which the case had been conducted. He also commented on the fact that although many distinguished physicians had been to see the accused man, yet it was the prison medical officer who by a chance remark was able to restore certain portions of his memory, and the judge added that those in the criminal courts knew how concerned prison medical officers were for the welfare of those who came into their hands.

The prosecution's point was that the facts suggested an agreement to commit suicide. He explained the law on suicide pacts whereby a survivor was held to be guilty of murder. Assuming the jury was satisfied that Mrs. Lockhart died at the hands of the accused man or as the result of a suicide pact, Serjeant Sullivan had still contended that the verdict should be "Not guilty," and had put forward the defence of unconscious action. He had spoken of the accused man as being an automaton, and the jury must ask themselves how far these ideas carried them in a case of this kind. Learned counsel had spoken of the rare and interesting phenomena which this case had presented to the medical profession. It might be that that was so, but they could only take cognizance of the evidence as to the facts which was presented to them. No great amount of help was obtained by considering that the case might be nearly like some other, or comparing it with the case of a sleepwalker. The sleepwalker did something when his mind was completely away, and if in his sleepwalking he fell through a window, and perchance killed someone by his fall, most people, he thought, would hesitate before describing it as murder. But they had to confine their attention to the evidence in the particular case. Lord Dawson seemed to go further in regard to the doctrine of unconsciousness or "unknowingness" than the mental experts, but at the end of his evidence he said that Dr. Lockhart had some appreciation of what he was doing. When the evidence was examined was it possible to say that there was anything like the unconscious act of an unconscious man? The judge referred in particular to the arrangements made for the administration of the anaesthetic and the preparation of the documents which were left for the manservant. Could these be regarded as the acts of an automaton or unconscious individual? There was evidence on which the jury could find, if they thought proper, that at the time he committed the act he was insane or was not responsible for his actions. No one contended that the accused man was insane to-day. Every man was presumed to be sane and to possess a sufficient degree of reason to be responsible for any crime he might commit until the contrary was proved—in other words, a man was not found insane on suspicion. To establish a defence on the ground of insanity it must be clearly proved that at the time of committing the act the accused was labouring under such a degree of mental disorder as not to know the nature and quality of his act, or, knowing it, to be unaware that he was doing wrong. If the jury reached that conclusion the verdict must be "Guilty but insane at the time of committing the act."

The judge dwelt at some length upon the evidence for at least a certain dissociation of ideas. He himself regarded the warning notice as to gas as the most important document in the case. Was there any dissociation of ideas in that? Was that the writing of a man who was an automaton? On reviewing the evidence of the psychologists it seemed a little dangerous that a jury should have put before them on their expert evidence a demand for a verdict of "Not guilty" because of what was said to be unconsciousness or "unknowingness."

The jury were absent for twenty minutes and then returned a verdict of "Guilty but insane." The order of the court was that Dr. Lockhart "be kept in custody as a criminal lunatic in such place as shall be directed until His Majesty's pleasure be known."

EXPECTATION OF LIFE IN WAR TIME

By the Fatal Accidents Act, 1846, if the wage-earner of a family is killed through negligence the widow and children may be awarded damages against the offender. The amount of the damages depends on the pecuniary loss suffered by the household. Mr. Justice Oliver decided in a recent case* that in arriving at the damages it is proper to take into account the possibility of the man being killed in the war. A man aged 31 years was killed in a motor-car accident through negligence. From a chemist's apprentice he had become manager of one of Messrs. Boots' branches, and was in the running for a position that might have brought him a thousand pounds a year. On the other hand, the judge pointed out, the court must consider that he might have been killed in a war, either through fighting in it or through an air raid. The additional war risks applied to his case even though he died before war broke out. Considering also the possibility that the widow might marry again, his Lordship awarded her £2,250, her small son £500, and her daughter £250. Damages in this case were, by agreement, assessed under the 1846 Act, but similar principles would doubtless have been followed if the court had been assessing the deceased's expectation of life under the Law Reform Act, 1934, which allows damages to the estate (not the dependants) of a person who is killed by negligence.

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* Hall v. Wilson. 1939, 4 All E.R. 85.

Obituary

P. D. WARBURTON, M.R.C.S., L.R.C.P., D.P.H.

Surgeon, West of England Eye Infirmary

The sudden death on November 9 of Mr. Percival Dillon Warburton at Exeter came as a painful shock to a wide circle of friends both within and outside the medical profession, and his loss will especially be felt in B.M.A. circles in Devon and Cornwall in view of his conspicuous work for the Association for many years.

Born at Retford in 1885, he was educated at Wesley College, Sheffield, and he received his medical education at Sheffield University and later at the London Hospital. He qualified M.R.C.S., L.R.C.P. in 1911, taking the Sheffield D.P.H. in 1914; and at the Royal Infirmary, Sheffield, he successively held the posts of house-physician, house-surgeon, and ophthalmic house-surgeon. He joined the Regular R.A.M.C. in 1913, being seconded to complete the house appointments at Sheffield; and on the outbreak of the last war he reached Belgium in October, 1914, as M.O. to the 1st Battalion, South Staffordshire Regiment, but was afterwards attached to No. 13 General Hospital, Boulogne, as a surgeon. In 1914 he had passed out of the R.A.M.C. College with distinction in pathology and bacteriology. After serving in France and Belgium till 1918 he was early that year sent to India, where he became D.A.D.M.S. with temporary rank of Lieutenant-Colonel, and was also chosen for the appointment of specialist in prevention of diseases at Secunderabad. Retiring from the Army in 1921 he returned to England and came to Exeter, where he immediately engaged in ophthalmic practice. In 1922 he was appointed assistant surgeon to the West of England Eye Infirmary, and in 1932 succeeded Mr. Ransom Pickard as a full surgeon, becoming widely known in this specialty. He also held the surgical registrarship of the Royal Devon and Exeter Hospital, and in 1925 was appointed medical officer in charge of the venereal clinic there.

Warburton was a keen and active member of the B.M.A., which he joined in 1917. In 1925 he became honorary secretary to the South-Western Branch, an office which he was still holding at his death; and in him the Branch loses a quietly efficient and conscientious worker for the Association whose place, especially on the Branch Council, will be hard to fill. He was also a member of the Central Ophthalmic Committee for the eight years preceding the taking over of the functions of that committee by the Ophthalmic Group Committee. Warburton was a man of taste, culture, and wide interests, in fact a man of the world; and he was always ready if necessary to speak his mind honestly and fearlessly, though never with any trace of personal rancour. Being himself of a modest and retiring disposition he particularly resented anything in the nature of what he considered unnecessary display; and in committee, as in affairs in general, he frequently made valuable contributions, thanks to his power of forming sound and intuitive independent assessments of problems and underlying motives. He was a lover of Devonshire and of country life and an enthusiastic sportsman of varied interests: a dry-fly fisherman, a golfer, a keen lawn tennis player fortunate in the possession of a beautiful hard court, and a member of the Tiverton Hunt, of which, usually accompanied by his children, he was an ardent follower for many years. Moreover, in his student days he was a keen soccer player, being a member of the Sheffield Wednesday team in the early years of that club. In 1919 he married, in Bombay, Marjorie, daughter of the late Mr. A. H. Tozer of Theydon Bois, Essex, and of Lloyds, London, who survives him. He also leaves two sons and a daughter, and to the family the deepest sympathy goes out in their sad and premature loss. Popular without ever courting popularity, all who knew Warburton could not fail to note during the last six months how altogether exceptionally deeply the present troubles of his country had affected his personal outlook and philosophy. F. A. R.

F. W. M. CUNNINGHAM, D.S.O., M.D., F.R.C.P.Ed.

Physician, Royal Sussex County Hospital

The sudden death of Dr. Frank Cunningham on November 10 brought a sense of personal sorrow to his many friends, and particularly to the community of the Royal Sussex County Hospital, where in every rank he was held in affection and esteem.

Educated at Glasgow Academy in his early years, he passed on to Fettes College, where he won a foundation scholarship, and thence to Edinburgh University with an open classical exhibition. It was to medicine, however, that he decided to devote himself, influenced perhaps by the advice of his distinguished uncle, Professor Dan Cunningham, who at that time occupied the chair of anatomy in the university. After graduating M.B., B.Ch. in 1907 he became junior house-physician to the late Dr. George Gibson, in whose classes he had won the prizes in clinical and theoretical medicine, and thereafter was medical officer to the Royal Crichton Institution, Dumfries. He then came south and became house-surgeon and house-physician to the Royal Sussex County Hospital, where he formed those strong attachments which in after-years found their fulfilment in an appointment to the honorary medical staff and in a period of fine service which culminated in his becoming senior physician to the hospital. But before this he was to spend some years in the R.A.M.C., first in India and subsequently in the great war in France. He came over as medical officer to Sir James Wilcox's staff, and when the Indian contingent was withdrawn was given the command of the 73rd Field Ambulance with the rank of lieutenant-colonel. In this command he greatly distinguished himself and was awarded the D.S.O. with two mentions in dispatches. During the Armistice he served on the special commission on the reorganization of front area medical work. He retired from the Army in 1919 and started practice in Hove that year. Success quickly followed and he soon became one of the leading and most trusted practitioners in the town. After taking the M.R.C.P.Ed. he was elected in 1921 to the honorary medical staff of the Royal Sussex County Hospital, and later became M.R.C.P.Lond. and F.R.C.P.Ed.

The loss to the hospital he so greatly loved is a heavy one, for he threw himself heart and soul into all its activities, and even in the last year or two, when his former robust health showed some signs of failing, he never ceased to spend himself in its interests. Cunningham took his profession very seriously and it was always his aim to uphold its high tradition. With a wide outlook on life, he was essentially the sound, sagacious, and kindly physician and consultant, intensely concerned with his patients' interests and ever their friend as well as doctor. As an example of his devotion, the writer remembers with lifelong gratitude the many weeks of a life-and-death struggle during which his friend Frank Cunningham gave up his practice, lived in the house and watched over him night and day till all danger was past. Such was the man and such the devotion which earned him the trust and affection of many who now feel forlorn at his passing.

No review, however brief, of Cunningham's life would be complete without mention of his love of all kinds of sport. He was a keen follower of cricket and was a member of the committee of the Sussex County Cricket Club. Seldom, if ever, did he miss a rugger international at Twickenham, and many will miss his cheery presence in the band of friends who used to foregather there on these occasions. He was himself a hockey international player and "blue," a fine golfer, and an enthusiastic fisherman. Frank Cunningham's varied career and numerous interests no less than his straight and friendly character brought him the happiness of many friends, whose first thoughts and deep sympathy will go out to his widow. Him they will remember as one who lived his days generously, simply, and with modesty, as the best always do. H. N. F.

Dr. L. A. **Parry** writes: By the death of Francis William Murray Cunningham, Hove has lost a beloved and respected physician, who will be missed by a large circle of colleagues, friends, and patients. He joined the British Medical Association in 1916, and was a member of the Brighton and Sussex Medico-Chirurgical Society, being elected president two years ago, an office the duties of which he carried out with great distinction. Of late years he had, owing to ill-health, given up general practice, with the exception of some of his old patients. He to the last kept on his work at the Royal Sussex County Hospital, to which he was very devoted. A memorial service was held at All Saints, Hove, on November 13, which was attended by a very large number of his medical and other friends. Dr. Cunningham was an essentially honest and straightforward man, loyal in his friendships, hospitable and generous, always available to his colleagues. The profession in Hove know they have lost a loved and distinguished doctor—one whom they all admired and trusted.

Dr. **Alec Landale Clark**, who died on November 5 as the result of a road accident, had practised for some years in Gilbert Street, London, W. Son of the late John B. Clark of Broughty Ferry, he studied medicine at Edinburgh University and graduated M.B., Ch.B. in 1923, and then served as clinical assistant and house-physician at the Edinburgh Royal Infirmary. While in practice in Mayfair he worked as clinical assistant at the West London Hospital, the Hospital for Sick Children, Great Ormond Street, and the Hospital for Women, Soho Square. "E. B." writes from Edinburgh: As one who had known Landale Clark from his earliest undergraduate days I would add a few words in memory of one who will be missed by many. "Lal" Clark, as he was known to his intimates, had a host of friends both within and without the profession. His was a very happy disposition; he radiated happiness and he had a kindly thought for everyone. Brought up as a delicate child upon whom every care was lavished, it was interesting to watch the development of his personality. Gifted with a beautiful singing voice and a lover of music, one wondered whether he would take medicine seriously. But any doubts which may have existed were speedily dispelled, for as a house-physician, and indeed throughout his life, his profession and his patients were always, with him, the first consideration. He was a man with high ideals, and his sense of duty dominated his outlook. Lal Clark had a flair for doctoring, for he combined the faculty of picking out the clinical essentials with an unusual depth of understanding and a very genuine charm of manner which gained for him the confidence and the affection of his patients. His partnership with the late Jim Brunton Blaikie in one of the busiest practices in Mayfair was a singularly happy association.

The Services

NAVAL COMPASSIONATE FUND

At the quarterly meeting of the directors of the Naval Medical Compassionate Fund, with Surgeon Vice-Admiral Sir Percival Nicholls, K.C.B., K.H.P., in the chair, the sum of £149 was voted to the applicants whose cases were considered.

"INDIAN MEDICAL SERVICE: A HANDBOOK"

Major A. N. Chopra has published a handbook for the I.M.S., giving all rules and regulations for service therein, which should be most useful to all members, not only to those joining as new recruits, but also to older and more experienced officers.[1] In successive chapters it gives, with appropriate references, the rules for recruitment, conditions of service, courses of instruction, pay, leave, including study leave, travelling allowances, passages to Europe, the Funds, and pensions. Seventeen appendices complete the work, giving the actual text of various Government Orders, the most important of which are No. I, the Royal Warrant of Service, No. XI, conduct rules for all Government servants, and No. XII, dress regulations; also rules for selection for promotion, attendance at senior courses of instruction, procedure when called on to give evidence in courts of law, private practice—all things which it is necessary for an officer to know, but which it is sometimes difficult to find at short notice when reference to authority has been required. It may be said without hesitation that the work is a most useful one, which should be in the possession of every officer of the I.M.S. On page vi is given a list of abbreviations used. Many abbreviations are used in the text which are not included in this list. Fortunately, most of them are easily interpreted. What most strikes a senior whose recollections go back some sixty years is the great rise in advantages—for example, pay on entry, £650, instead of £286; grant of study leave, and of free passages; and the opportunity of retiring on a gratuity after five years' service. On the other hand, the cost of living has considerably increased, and no doubt service in India is not so pleasant as it was half a century ago.

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[1] *Indian Medical Service: A Handbook*. 1939. By A. N. Chopra, Major I.M.S. (Pp. 256. Rs. 2, or 3s.) Delhi: Manager of Publications.

Universities and Colleges

UNIVERSITY OF OXFORD

Applications are invited for the Nuffield Professorship of Orthopaedic Surgery, and should reach the Registrar of the University not later than December 16. The stipend is £1,200 per annum and £600 as clinical director of the Wingfield-Morris Hospital; private practice not allowed; age limit 60. Residence is required during forty weeks in each academic year. Further particulars may be obtained from the Registrar.

UNIVERSITY OF LIVERPOOL

The Council of the University of Liverpool, on the recommendation of the Senate, has conferred the title of Professor Emeritus on Sir Robert Kelly, M.D., F.R.C.S., who occupied the chair of surgery from 1922 to September, 1939.

UNIVERSITY OF ABERDEEN

The Senatus Academicus of the University of Aberdeen has decided that students on military service will be allowed, when they return to civil life, to resume any fellowships, scholarships, or bursaries whose tenure may have been interrupted.

UNIVERSITY OF WALES

Welsh National School of Medicine

The following candidates for the degrees of M.B., B.Ch. have satisfied the examiners at the examination indicated:

Medicine.—R. T. Bevan, H. R. Hudd, C. W. D. Lewis, Silvia M. D. Mehta, Enid M. Powell, Mary M. Williams.

Medical Notes in Parliament

In the House of Lords on November 16 the Royal Assent was given to the National Loans Act, the Prices of Goods Act, and the Chartered and Other Bodies (Temporary Provisions) Act.

The Bastardy (Blood Tests) Bill, which was waiting for Committee in the House of Lords, on recommitment, lapsed with the prorogation.

Sir Francis Fremantle presided on November 16 at a meeting of the Parliamentary Medical Committee. Dr. Salter brought forward a report from a medical man who had been transferred from a London hospital to take charge in a home county of a public assistance institution which must prepare 1,600 beds against emergencies. This report made complaints of maladministration and said that questions about supplies had to be referred to the county medical officer, not to the sector officer. On behalf of the Parliamentary Medical Committee Sir Francis Fremantle placed these complaints before Dr. Elliot. It is understood that the Minister made arrangements for a special inspection. The same meeting of the Parliamentary Medical Committee endorsed the approach made to the Air Ministry to secure, with special regard to venereal diseases, the appointment of women medical officers to attend women attached to the Air Force. The Committee also decided to urge the appointment of mobile units to attend scattered units in Britain. It was remarked that local authorities would require assistance in dealing with venereal disease where Service personnel was scattered. A subvention was advocated for the films issued by the Social Hygiene Council. Mention was made of the circulation of anti-vaccination pamphlets among the civil population, and Sir Francis Fremantle's action in challenging this was endorsed. The Committee held that an authoritative contradiction of these pamphlets should be circulated by the Ministry of Health.

Before the Parliamentary Session ended by a prorogation on November 23 the House of Commons discussed unemployment and also the problems of evacuation and education in Scotland. A meeting of the University M.P.s' Committee was arranged for November 22.

E.M.S. and Specialist Services

Sir Ralph Glyn inquired on November 13 whether there was adequate specialist treatment available for persons threatened with blindness and attending Moorfields and other London hospitals, and whether Dr. Elliot would authorize immediate release of enough eye, heart, throat, and ear specialists to attend to their normal peace-time work.

Dr. Elliot said he knew no difficulty in providing adequate specialist treatment for ophthalmic cases. In general, there had not been interference with necessary treatment in the other types of case he mentioned. As to the position of specialists, he was discussing with a special committee the terms of service of specialist and other members of the Emergency Medical Service. He hoped to make a statement in the following week on the result of this consultation.

Emergency Powers for Universities

In the House of Commons on November 14 Sir Donald Somervell moved the second reading of the Chartered and Other Bodies (Temporary Provisions) Bill. The general purpose of the Bill, he said, was to enable modifications to be made in the constitution and electoral procedure of bodies incorporated by Royal Charter, statutory bodies, and universities and colleges, if such modification became necessary to meet war conditions. The Bill followed on the earlier measure dealing with Oxford and Cambridge, and gave the universities power to pass emergency statutes. These would be required to deal with such matters as the postponement of elections to office, the suspension of offices becoming vacant, and the suspension of conditions relating to candidature and tenure of office, scholarships, and so on. The Bill was read a second time.

Education in War Time

Mr. Lees-Smith opened, on November 16, a debate on education. He said one disastrous result of the present situation was that schemes for milk in schools, medical service, nursing service, dental clinics, and other services had practically come to an end. In the early stages of the war doctors were concentrated in the hospitals and the result was that services outside the hospitals were being starved. Dr. Haden Guest, in an earlier debate on evacuation, had shown that there were enough doctors and nurses available, properly distributed, to provide a nucleus for the hospitals, ready for emergency and at the same time to carry on the public health services, the medical services, and to provide a service of consultants.

Mr. Kenneth Lindsay, in a general statement, said the average weight of some of the evacuated children had increased by 3½ lb. Many were benefiting from the changed conditions; those in country areas were taller, stronger, better fed, they slept longer, and were more alert and easier to teach. Had there been an evacuation in 1914, 33 per cent. instead of 3 per cent. of girls' heads would have been unclean. In reception areas an adequate medical service was now operating. In neutral areas, wherever schools were opened, there was a normal service. In evacuation areas a skeleton service was operating, and with the reopening of schools it would be extended.

A circular advocating the wider use of communal meals for evacuated children would be issued shortly. The Government had agreed to meet overhead charges, and it should be possible to provide children with a good meal for 2½d. to 4d. Evacuated children who received free milk in their own areas usually continued to receive it in the reception areas. Many of the evacuated children whose parents paid for milk in their own areas also continued to receive it. There had been an inevitable falling off in the consumption of milk by children in the evacuation and some neutral areas where schools were closed pending the completion of air raid precautions. It was estimated that 150,000 children under 5 were now in reception areas, 41,000 of them unaccompanied by parents. Nursery schools of the orthodox type were not possible for them, and it was also felt that crêches and day nurseries would not meet the problem. A scheme for dealing with these children on different lines would be announced. Mr. Lindsay said there were about 900,000 children in evacuation areas, 1,700,000 in neutral areas, and 2,500,000 in reception areas.

Serious Casualties at First-aid Posts

Mr. Groves asked Dr. Elliot on November 16 whether his attention had been called to the fact that in Barcelona a system of aid posts and mobile units similar to that in this country had to be abolished because it proved impossible to prevent the reception of serious cases at these posts, from which they could not be evacuated to hospitals without fatal delay. He also asked whether the Minister's attention had been drawn to the further fact that the death rate was notably diminished by the abolition of aid posts and mobile units. Dr. Elliot said in reply that he had seen statements in the medical press to the effect stated by Mr. Groves. He was advised that the conditions as they existed at Barcelona were not parallel to those in this country. The instructions here were that the seriously injured were to be taken direct to hospitals and not to first-aid posts. He had no reason to believe that these instructions would not be observed. Many first-aid posts in England and Wales were situated at hospitals. First-aid posts were inspected by his medical officers in every region, and he was satisfied the facilities were adequate for dealing with the type of case for which the posts were intended.

Doctors and Gas Masks.—Sir John Anderson, on November 14, informed Mr. Bull that he had received one or two representations, and others had been made to the Ministry of Health, from local authorities for civilian duty respirators for midwives and doctors in evacuation districts. He could not undertake to extend the issue of special respirators and anti-gas equipment to persons outside the public air raid precautions services and the emergency hospital service.

Notes in Brief

The question of allowing an extra ration of butter, when rationed, to tuberculous persons, particularly children, is under consideration.

On October 28 the number of patients on the waiting list for admission to tuberculosis sanatoria and hospitals in Wales was 225, or, including patients discharged by reason of the Emergency Hospital Scheme and awaiting readmission, about 600. Hutted hospitals in Denbigh and at Chepstow are making steady progress, and subject to the requirements of the casualty service will be of assistance in the treatment of tuberculous patients.

Medical News

Professor Grey Turner, M.S., F.R.C.S., has been appointed a corresponding member of the Surgical Society of Buenos Aires and an honorary member of the Society of Hospital Surgeons of Santiago of Chile.

The *Journal of the American Medical Association* for October 28 announces that Dr. Evarts Graham, professor of surgery at Washington University School of Medicine, St. Louis, has been honoured by the creation of a lectureship in his name, and thus Dr. Graham's influence in the advancement of scientific surgery will be prolonged.

The programme of the Royal Institution (21, Albemarle Street, London, W.1) announces a course of three lectures on food production in war time, by Sir Frederick Keeble, F.R.S., on Tuesdays, November 28, December 5 and 12, at 2.30 p.m. The subscription for this course payable by non-members of the Institution is 6s.

The British Institute of Philosophy announces that the second of the series of free public addresses, entitled "The Deeper Causes of the War and the Issues Involved," will be given by Professor Gilbert Murray in the Assembly Hall (entrance in Craven Street, Strand) of the Royal Empire Society at 2 p.m. on Thursday, November 30. The series will be continued in January and February, on dates to be fixed, by Professor Ernest Barker, Sir Richard Gregory, F.R.S., and Sir Richard Livingstone. Cards of admission can be obtained from the Director of Studies at University Hall, 14, Gordon Square, W.C.1.

Professor H. V. A. Briscoe, D.Sc., will read a paper on "The Chemical Properties of Siliceous Industrial Dusts" at the Royal Society of Arts on Wednesday, November 29, at 2.30 p.m. Applications for tickets should be made to the Secretary of the Society, John Street, Adelphi, W.C.2.

The October issue of the *British Journal of Rheumatism* has a note stating that publication of this periodical will be continued, possibly in a restricted form and possibly also at less frequent intervals.

According to *Il Policlinico* (Sez. Prat.) of October 30, of the 38,000 German doctors about a third are with the army, and of the remainder 1,200 have been sent where they are particularly needed, especially Danzig, East Prussia, Kassowitz, and Silesia.

An Order was made on November 9 by the Ministry of Food (Great Westminster House, Horseferry Road, S.W.1) which permits any person to use until further notice the following oils for the purpose of the preparation of any medicine or medicament for internal or external use without the necessity for holding an individual licence as required by Article 8 (*d*) and (*e*) of the Oilseeds, Vegetable Oils and Fats and Marine Oils (Control) Order, 1939: Coconut oil, cottonseed oil, gingelly (sesame) oil, ground-nut oil, maize oil, olive oil, palm oil, soya-bean oil.

The Library of the Royal Society of Medicine will now be open until 8 p.m., and may later be open until 9 p.m. if there is sufficient demand for this.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

In England and Wales there was a considerable reduction in the incidence of diphtheria, and small decreases were recorded in Scotland, Eire, and Northern Ireland. With the exception of Northern Ireland, notifications in these countries were well below those of the corresponding week last year, but deaths are slightly in excess (Scotland excepted). There has been little fluctuation in the figures for scarlet fever, and the low case fatality indicates a continuance of the very mild type prevailing in recent years. Dysentery is on the increase both in England and Wales and in Scotland; in the former country no locality is particularly affected, but in the latter more than half the cases, 31 out of 50, occurred in Edinburgh, where there has been an unusual prevalence of the disease during the last six weeks. Though probably unrelated to the dysentery outbreak, the high and increasing death rate in Scotland among children under 2 years of age from enteritis and diarrhoeal diseases is worthy of mention. It may well be that the causative organism is not so readily recovered from fulminating and fatal forms of the disease, and some of the deaths are actually attributable to dysentery.

Acute Poliomyelitis in 1939

During the late summer and autumn, the usual period of seasonal prevalence of poliomyelitis in the northern hemisphere, large epidemics were encountered in various parts of Germany, in Hungary, Switzerland, Holland, and in some of the States of the U.S.A. Except in Hungary and Italy the disease did not reach the 1938 level, but in certain American States it was decidedly more prevalent. In Germany the numbers recorded during the summer and autumn were lower than in 1938, but were well above the median of the immediately preceding eleven years. The majority of the cases were in Schleswig and the Berlin area; of the total 1,130 cases reported between September 3 and 30 in Germany (including Austria and the Sudeten area), 227 (20.3 per cent.) were in the former district and 147 (16.7 per cent.) were in the latter and 40 were in the district of Potsdam. In the previous year Rhenish Prussia, the Palatine, and Württemberg were the principal epidemic foci. In Switzerland the disease was more prevalent during September and October than in the corresponding months of 1938, but the total number was well below the epidemic year 1937. Of the 287 cases reported between September 3 and October 28, 87 occurred in the canton of St. Gall and 66 in that of Aargau, both in the north-east of the country. In 1937 the districts of Berne, Zurich, Vaud, Lucerne, and St. Gall were most affected. In Hungary three-quarters of the cases reported in September and October occurred in the three departments situated along the eastern frontier: of the 331 recorded 68 were in Szabolc department, 44 in Bihar, 91 in Hajdu, and 44 in the town of Debrecen. In the U.S.A. between August 3 and October 7, 3,993 cases were reported, compared with 550 during the corresponding period of 1938 and 5,187 in 1937. Five States contributed about 58 per cent. of the total: New York 717 cases, Pennsylvania 244, Michigan 587, Minnesota 369, and California 374. Outside these States poliomyelitis was less prevalent than usual.

In England and Wales the situation has been more favourable than in 1938, when the disease was unusually prevalent in a few counties, notably in Essex, but never attained epidemic proportions. Between July 1 and November 4, 1939, 473 cases of poliomyelitis were notified and 43 of polio-encephalitis, compared with 1,068 and 77 respectively in 1938. London largely escaped: 64 in 1939 for the same period and 86 in 1938, even although the principal foci in both years were in counties into which Greater London has spread—in Kent to the south of the Thames in 1939 and in Essex to the north in 1938. Sporadic cases and minor outbreaks have occurred in various counties, but in none, apart from Kent, has the disease been able to establish itself. During the current week as many as eleven counties were affected, but only in three did more than one case occur—namely, Kent 5 (1 each in Bexley, Bromley, Gillingham, Maidstone, and Eastry); Surrey 3 (1 each in Leatherhead, Merton and Morden, and Wimbledon); Middlesex 2, both in Harrow.

No. 44.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended November 4, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	16	—	8	2	1	13	3	7	2	—
Deaths		—	1				—	1		
Diphtheria	883	25	213	49	37	1,457	145	253	88	23
Deaths	22	1	6	8	1	19	2	8	2	—
Dysentery	47	—	50		—	34	9	15		—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	7	—	—	1	—	4	—	2	—	—
Deaths		—	1				—	—		
Enteric (typhoid and paratyphoid) fever	36	—	4	4	5	21	4	2	6	2
Deaths	3	—	—	—	—	1	—	1	—	—
Erysipelas			75	10	8			80	10	7
Deaths		1	2				1	1		
Infective enteritis or diarrhoea under 2 years										
Deaths	23	4	19	5	5	33	12	6	3	5
Measles	175	8	9		12		26	14		1
Deaths	—	—	—	—	—	1	—	—	—	—
Ophthalmia neonatorum	74	6	9		—	82	9	20		—
Deaths										
Pneumonia, influenzal*	534	41	10	2	4	583	75	6	4	5
Deaths (from influenza)	40	4	7	1	2	37	7	1	2	1
Pneumonia, primary			134	15				272	9	
Deaths		7		9	19		19		16	10
Polio-encephalitis, acute	3	—				3	—			
Deaths		—					—			
Poliomyelitis, acute	18	1	1	—	—	70	11	5	—	—
Deaths		—	1				1	—		
Puerperal fever	4	4	11	1	—	5	5	13	3	—
Deaths		—					—			
Puerperal pyrexia	142	6	19		3	155	7	22		5
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,333	33	214	52	122	2,040	168	403	83	111
Deaths	3	1	—	—	—	—	—	1	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	143	26	42		3		141	203		9
Deaths	5	1	1	1	—	4	1	1	1	—
Deaths (0-1 year)	255	27	78	15	18	267	40	65	33	23
Infant mortality rate (per 1,000 live births)						44	33			
Deaths (excluding stillbirths)	4,924	769	660	168	134	4,380	841	617	207	144
Annual death rate (per 1,000 persons living)			13.4	11.3	11.8	10.8	10.7	12.6	14.0	12.8
Live births	5,800	691	798	312	239	6,677	1,275	836	257	204
Annual rate per 1,000 persons living			16.2	21.0	21.0	16.4	16.2	17.0	17.4	18.1
Stillbirths	207	18	31			266	36			
Rate per 1,000 total births (including stillborn)			37			38	27			

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

A Historic X-ray Apparatus

Dr. R. T. GUNTHER, Curator of the Museum of the History of Science, Old Ashmolean, Oxford, announced in the *Times* of November 10 that his museum had lately received a portable *x*-ray apparatus of outstanding historic importance, for it was probably the first outfit of the kind to be placed at the disposal of army surgeons in war. In 1898 Captain E. G. Spencer-Churchill, then an undergraduate at Magdalen College, acquired a Wimshurst electrical machine, *x*-ray tube, and fluorescent screen, with which he showed his friends the bones in their hands. When, in 1900, he went out to serve in the South African War his *x*-ray equipment went out too, and was the only one then available in South Africa. Dr. Gunther would like to know from our readers whether there is any army record of an earlier *x*-ray apparatus being used in military surgery.

Fractured Femur in the Field

Dr. BERNARD CHAVASSE writes from Liverpool: The method of treatment referred to by your correspondents Dr. W. R. Wilson (*B.M.J.*, October 28, p. 896) and " D. W." (*B.M.J.*, November 18, p. 1028), who alludes to the description of it by Major J. B. Fotheringham (*Journal of the Royal Army Medical Corps*, March, 1939), is that which appeared under my name in your issue of October 5, 1918. I feel honoured that this method, which was slowly evolved under the conditions for which it was designed, has met with such distinguished and recent approval. The method is not a rival to the Thomas or any other proper splint. It is for application at the site of the casualty—separated from the regimental aid post (where a Thomas splint may be available) by what is apt to be a terribly long and rough journey. Only a stretcher and two stretcher slings are required. The rifle gives additional support.

Hygiene of Rubber Boots

" M.R.C.S." writes with reference to the inquiry by " Registered Medical Auxiliary " about a foot powder for soldiers wearing rubber Wellingtons: For the last forty years I have used rubber boots for all my shooting and fishing (except when wading). Blistering is prevented by making the feet a close fit in the boot by wearing two pairs of socks, or a pair of socks over stockings. This seems to prevent the feet getting over-hot in hot weather, and keeps them much warmer in cold. I also use an inner sole cut out of a thin sheet of cork. This sole can be taken out and dried after use. Of course the socks should be changed and dried—at any rate the outer pair, which seem to absorb most of the moisture. The boots need drying inside as far as possible. No doubt these precautions could not be taken in the field, but some form of inner sole and an extra pair of socks should do away with most of the risk of discomfort or injury to the feet. Any powder would probably form a cake with the sweat.

Obesity after Childbirth

" G. W. G." writes: Can any reader give me advice regarding a woman patient aged 30, who weighs nearly 16 st (height 5 ft. 6 in.)? One year ago she had a child, and since that event has put on 1½ st. The breasts are still full of milk, although the child has been weaned for ten months. She eats moderately and avoids most fattening foods. Apart from getting somewhat easily tired and being very worried about her figure she enjoys good health.

Muscular Twitchings

" H." writes: Can any of your readers suggest a treatment likely to control general twitching of the muscles—sometimes affecting all the muscles of the body? Calcium and parathyroid, luminal, and chloretone have been tried without effect. The patient is 80 years old.

Income Tax

Husband and Wife

" DELTA " has been called up for military service, and his wife, who is in the A.T.S., has also been called up, and is stationed some distance away. Can he claim that they are legally separated so far as income tax liability is concerned?

⁂ No. The precise point has not been before the courts, but the general argument in Eadie *v.* Commissioners of Inland Revenue—that absence by reason of duty, business, pleasure, etc., does not constitute separation—would be against the claim. " Delta " is, however, entitled to the additional personal allowance in respect of his wife's earnings—£45 for 1939–40.

Division of Partnership Assessment

X. took Y. into partnership on a 50 per cent. basis as from April 1, 1939, and the firm's assessment for 1939–40 was based on the amount of X.'s (sole) practice for 1938–9. Consequently his car expenses—£305—for that year were deducted in calculating the assessment, but, of course, no expenses were deducted on Y.'s account—he was not then in partnership. How should the assessment of £x be divided between X. and Y.?

⁂ There is no legal rule that covers the facts, and the partners evidently only want an equitable basis for division. Our suggestion is as follows. Compute the amount of expenses Y. will incur corresponding to X.'s £305—we will suppose it is £150—then add both amounts to £x and divide equally before taking off the expenses. The results will be: X.'s share, 1/2 of (£x + £455) less £305; and Y.'s share, 1/2 of (£x + £455) less £150. Unless Y.'s estimated expenses are taken into account in this way he will pay on more and X. on less than fairness suggests.

LETTERS, NOTES, ETC.

"Foreign Pharmaceutical Products"

Messrs. BALLANTYNE, CLIFFORD AND CO., Solicitors, 120, Fenchurch Street, E.C.3, write: We have been instructed by our clients, Messrs. H. R. Napp Limited of 3 and 4, Clements Inn, W.C.2, to write you with reference to the publication in your *Journal* of the booklet issued by the Association of British Chemical Manufacturers and the subsequent references to the same appearing in your issues of November 4 and 11. Our clients do not feel that the matter has been dealt with satisfactorily so far as they are concerned, although they are glad to note and appreciate your expression of regret for having published material which may infringe the registered trade names mentioned in the booklet. They desire us, however, to call your attention to certain matters which have not been specifically mentioned and without knowledge as to which, they feel, there is danger of your readers forming an erroneous view both with regard to them and the products. We refer to the fact that not only are these products manufactured by our clients in this country but that they have been so since their inception several years ago, and that they are and always have been marketed in cartons upon which is clearly indicated that they are made in England. Our clients feel sure that you would wish to prevent as far as possible any injustice to them arising from this unfortunate publication, and they hope you will insert this letter.

Corrigendum

The designation of Dr. John Sainsbury was incorrectly given under his signature at the end of the letter on " A Drop-wrist Splint " published last week at page 1021. It should have read " Late Medical Officer in charge Massage and Electrical Department, Special Surgical Military Hospital, Ducane Road."

BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 2 1939

TREATMENT OF WAR FRACTURES BY THE CLOSED METHOD*

BY

J. TRUETA, M.D.

Late Director of the Department of Surgery, General Hospital of Satalunya, Barcelona

Advance in the treatment of compound fractures has always been secured by the experience gained in time of war. Only in wars are fractures sufficient in number to permit a study of all the problems involved. This was evident in the great war, the last great conflagration which preceded the war in Spain. In the twenty years that have elapsed since the end of the great war progress has, however, been maintained because of the increase of casualties due to road and industrial accidents. For this reason the outbreak of the Spanish War found the study of injuries more advanced than at the end of the great war.

Compound fractures in war may be produced by various projectiles: bullets fired from rifles or machine-guns, artillery fire, and aerial bombs. Injuries from aerial bombs are always more destructive than others, even gunshot wounds, so that in this paper I shall give special attention to air raid injuries because of the gravity of the lesions.

Treatment of open fractures is not merely treatment of the bone but of the wound. Bone should be considered as organic tissue which reacts similarly to other tissues, so that the fracture is only a wound of the bone. Treatment of the wound is then the principal part of treatment of open fracture.

At all times the treatment of open fractures has been directed towards two objects: (*a*) to avoid or to overcome the infections which jeopardize the life of the wounded or his fractured limb; and (*b*) to obtain the best possible reduction of the fragments, and by immobilization to secure consolidation of the fracture without deformity.

In all surgical works of the past these two aims have been prominent. In the writings of Ambroise Paré, for example, his preoccupation with these problems is evident. Against infection he recommends a paste containing turpentine, comparable to the use of antiseptics three centuries later, and for immobilization of the fracture he advocates splints, which are illustrated in his books. Paré was the first surgeon who opposed the custom of his time of cauterizing wounds by means of boiling oil with the idea of destroying the "poisons" produced in them. Like many other advances in surgery, this innovation came about by accident. He described it in the following words:

> "At length my oil lacked and I was constrained to apply in its place a digestive made of yolk of eggs, oil of roses, and turpentine. That night I could not sleep at my ease, fearing that by lack of cauterization I would find the wounded upon which I had not used the said oil dead from the poison. I raised myself very early to visit them, when beyond my hope I found those to whom I had applied the digestive medicament feeling but little pain, their wounds neither swollen nor inflamed, and having sleep through the night. The others to whom I had applied the boiling oil were feverish, with much pain and swelling about their wounds. Then I determined never again to burn thus so cruelly the poor wounded by arquebuses."

I will not waste further time with the history of the subject, but will discuss only the weapons we use against infection and deformity in open fractures.

AVOIDANCE OF INFECTION

Local Antisepsis

From the time that Lister applied to surgery the discoveries of Pasteur, antiseptics were considered the most efficient means of avoiding infection of wounds. The great progress which Lister's technique represented was not, however, generally accepted for many years, and Lister had great difficulty in obtaining recognition for the new methods, which were so opposed to the concepts in vogue in his time.

Beginning with Lister's carbolic acid and the mercury derivatives advocated by Koch,[9] trial of new antiseptic products has continued up to our own day. Each new antiseptic has been an improvement on the one that has preceded it, in both its bactericidal power and its lessened toxicity for the tissues of the body. Progress continued until the time of the great war, when Alexis Carrel introduced continuous irrigation with hypochlorite solutions. This was shown to be more efficient than any antiseptic used up to that time, because it united to its bactericidal power a very weak toxicity for the cells of the body. The reason for the efficacy of continuous irrigation with Carrel-Dakin solution was not properly appreciated. The good results were ascribed to its great bactericidal power, whereas the real reason was that its slight toxicity allowed the tissues to react against infection. This was confirmed by Sir Almroth Wright, who obtained the same or even better results from the use of hypertonic solutions which had no antiseptic power but which acted physically in promoting drainage. Post-war experience has shown the doubtful value of antiseptics as a means of preventing infection in wounds, and in my opinion the war in Spain has confirmed this.

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Biological Antimicrobic Methods

The vogue for vaccines and serum, which some years ago was extensive, has also diminished. Apart from antitetanic serum and to a less extent anti-gas-gangrene serum, the use of sera for all other wound infections fails to produce effective antibodies because of lack of specificity.

Chemotherapy

Since the publication of the work of Domagk compounds of the sulphanilamide group have been widely used in the treatment of wound infections. This new method of treatment has been advocated with the same enthusiasm as was the introduction of the other forms of antisepsis. Apart from the complications, such as nephritis, anaemia, erythematous rashes, and petechiae, which are observed when these drugs are used for severe infections and in large doses, I do not share the enthusiasm which was expressed in a monograph published in Spain during the war by Drs. D'Harcourt, Folch, and Bofill (1938). I have not seen good results in severe infections of the limbs, though in pleuropulmonary infections and in some cases of meningo-encephalitis the results have been more encouraging. I believe it is necessary to use sulphanilamide compounds with prudence, never exceeding 6 or 7 grammes a day, and reducing the amount as soon as the drug is beginning to produce beneficial effects.

Excision of the Wound

Until the year 1897, when the German surgeon, P. L. Friedrich, published his experimental work on excision of contused wounds as if they were neoplasms, the factor of the vitality of the tissues as a decisive element in the struggle against infection was not given its due importance. Since then this principle has been appreciated, and in the great war it was finally accepted. No treatment against infection, such as antisepsis of the wound or the use of sera, is employed to-day without first excising all damaged tissues, particularly those deprived of circulation. The only variation has been in the selection of the tissues which must be excised most radically. Contrary to the opinion held during the great war by surgeons like Leriche, I believe that the greatest danger of infection lies not in bone but in muscles. Bone plays an almost passive part in infections and is only invaded secondarily after colonization of the organisms in the soft tissues. Dead muscle tissue is a favourable soil for the development of anaerobic infections, and for this reason must be excised meticulously. Small haematomata in the intermuscular spaces are good culture media which should be followed up systematically. Skin, on the other hand, provided it has a good blood supply, should be preserved, only the edges of the wound being resected with scissors. After the publication of Friedrich's work and the experience which followed it, but especially as a consequence of the great war, a new factor gained importance—namely, the time which elapses between the production of the wound and the removal of the devitalized tissues. As a result of the experience of the great war eight hours was considered the limit as the optimum time for operation before infection of the wound occurred. But this limit is not exact because it varies in relation to the degree of destruction of the tissues. I have been able to see in hundreds of cases an aseptic course in wounded patients operated on after eight hours, provided the wound was but little contused, as, for example, in wounds produced by bullets fired from a distance. On the other hand, in wounds from shrapnel, and especially those produced by aerial bombs, infection occurs much earlier, often in less than four hours.

Shock

Patients with compound fractures produced in air raids showed signs of shock immediately after infliction of the wound, but this shock generally disappears with appropriate treatment, especially morphine, lobeline, heat, and transfusion of blood. Rest, physical and psychological, also helps to revive these patients. To this primary or psychic shock is added secondary or true shock when the wound has not been properly treated within a few hours. In extensive wounds of the limbs I have been able to observe clinically, perhaps for the first time on a large scale, that true shock is the result of absorption of disintegrating tissues. After air raids in Barcelona it has been possible to operate radically on hundreds of patients with severe wounds of the limbs within half an hour, and sometimes within twenty minutes. After treatment of the primary shock a meticulous operation was performed, all the devitalized tissues being removed and the limb itself preserved wherever possible. When operation was undertaken immediately it was common to observe that secondary shock did not occur, nor did generalized infections develop. If true shock is to be avoided, I am convinced that operations for compound fractures with extensive wounds should be performed within the limit of two hours. In this I agree with Professor Manuel Bastos, who reached similar conclusions from experience in Madrid, where because of the proximity of the front it was possible to operate within this optimum period. Unfortunately, this limit of two hours cannot always be observed in the Army, because of the difficulty of transporting the wounded to the casualty clearing hospital, especially when the numbers are great and many have to be collected from between the two lines of fire. On the contrary, in bombarded cities the existence of civilian hospitals within the town allows immediate assistance to the injured, provided the organization is adequate.

Physical Methods: Open Treatment

Among the procedures aiming at sterilization of the wound by physical means, open treatment has been most widely followed, and has given the best results. Suggested during the great war by the German surgeon F. Schede (1915) and accepted immediately by Braun and later by Böhler, this method has produced excellent results. Schede used plaster casings with windows, as later did Böhler, while Braun only fixed the limb by a splint with the wound uncovered. The results that I have obtained by this technique have not been unfavourable, especially the promotion of healing under the slough, but it is of limited use in deep wounds of the limbs because retained secretions remain undrained under the slough. Only in severe trauma of the lower limb when there is doubt about the possibility of saving the limb is it necessary to watch the state of nutrition of the tissues for two or three days. In these cases it is advisable to employ open treatment, after immobilizing the limb correctly by continuous traction and a good splint, such as Thomas or Braun. This treatment, by exposure to the air, is better than the use of antiseptics, because it does not interfere with the natural defence mechanism of the body, while allowing the surgeon to watch the wound without the necessity for handling it. Also it is painless and simple. This technique, like the use of antiseptics, is employed only after complete excision of the wound—that is, after applying the principle of Friedrich.

Drainage

One of the factors which favour the development of infection is retention of discharge, especially when, as in all war wounds, colonies of organisms exist in the depth of the wound. Good drainage is essential, for a badly drained cavity allows the collection of fluid, at first consisting of blood, but rapidly changing to pus. In my experience the best drain proved to be sterile absorbent gauze introduced between the tissues in the direction of the muscle fibres. Sometimes counter-drainage by a rubber tube was inserted through the plaster into the most dependent part of the cavity.

Immobilization

It is well recognized that movement increases the dissemination of infection in the body and the absorption of toxins from wounds. This is probably due to interference with the local defence mechanisms through rupture of the small capillary and lymphatic thrombi by which the wound is isolated from the general circulation. Certainly it is true that a rigorous immobilization constitutes one of the most effective means of preventing and combating infection.

What do we understand by a rigorous immobilization? An immobilization which prevents movement of all the tissues, but especially the most vascular—that is, the muscles. This protection against movement can only be obtained by enclosing the extremity under a rigid casing, which while preventing all movement, even the most insignificant, permits a good circulation. The only known material which supplies this requisite is plaster-of-Paris. Experience in Catalonia is on this point convincing, as we shall see later. The only disadvantage of plaster is that it prevents examination of the wound at any given moment. Fortunately this examination is seldom necessary, but one must be quite dogmatic about the indications. In the upper limb, if the treatment has been correctly applied, progress is always satisfactory with the closed method, and gas gangrene and septicaemia are very rare. I have never seen these complications, even in patients treated by young surgeons with a limited experience. It is therefore not necessary to examine the progress of the wound. In the lower limb, thigh and leg must be considered separately. When operating on fractures of the leg, especially those involving the popliteal region or the calf, it is necessary to examine carefully both the circulation of the foot and the local circulation of the part, and especially the possibility of excising all devitalized tissues. When, in spite of this excision, there is still doubt about the vitality of the tissues that remain, or about the total circulation of the leg, it is essential to wait two or three days before putting on plaster, using instead open treatment with continuous traction which will permit frequent observation of the state of the circulation. In this way amputation can be undertaken without loss of time when it is apparent that the nutrition of the limb is insufficient. In the thigh the indications are similar, but with the difference that here the local circulation of the tissues surrounding the wound is more important than the general circulation of the leg, because the latter is more easy to assess. Here also if there is doubt one must wait two or three days, keeping the patient in bed with the wound open and the leg fixed by continuous traction. With this line of treatment it has been possible to save many limbs as well as lives, and to see gas gangrene disappear progressively from our hospitals.

I must consider here another question. Should these wounds be sutured or should they be left open? In this my criterion is absolutely definite. If suturing would produce the slightest tension in the soft tissues the wound must be left completely open. If there is any doubt about the vitality of the tissues, especially the muscles, then here too the wound must not be sutured. It will be readily understood that in wounds from aerial bombs, which constitute the greater part of my experience of war wounds, one seldom sees cases where suture of the skin is possible. On the other hand, in accidents of civil life suture can, under certain conditions, be performed without danger.

REDUCTION OF FRACTURES AND IMMOBILIZATION WITHOUT DEFORMITY

The only satisfactory method of obtaining reduction of fractures is by traction, initial or continuous. Reduction must be secured by the application of extension on the operating table. Each region has its own special technique. In the upper extremity it is possible in most cases to reduce the fracture by manual traction at the end of the operation. Occasionally in fractures of the humerus extension has to be made by transfixion with a Kirschner wire through the olecranon against counter-traction by means of a towel crossed around the thorax and fixed to the operating table. In fractures of the lower limb the deformity is reduced by traction, the details varying with the site of the fracture. To ensure proper reduction some form of orthopaedic table should be used. The purpose of the traction is to reduce the fracture and maintain it in reduction so that after the surgical treatment of the wound is completed a plaster cast can be applied.

Operation on the lower limb is performed with the fracture reduced by traction. In this way all the tissues are in their normal position, so that both bone and soft tissues are more easily explored. Traction is made progressively in such a way that reduction is complete at the end of the operation. This is one of the reasons why x-ray examination is unnecessary before the operation. All the tissues with a bad circulation are excised, the bone fragments are placed in a good position, and the cavity drained with gauze.

Immobilization with Plaster-of-Paris

This should be put on under the anaesthetic in all cases where it is possible, profiting by the good reduction of the fragments that has been obtained by the continuous extension. *The patient should never be moved from the operating table in order to put on the plaster.* The reasons for this are clear: reduction of the deformity would be lost, time would be wasted, and shock increased.

Plaster-of-Paris Technique

To obtain complete immobilization both of the bone and the soft tissues the plaster should be put directly on the skin without the interposition of cotton-wool or stockinet. Only the anterior superior iliac spine, the os calcis, and the tendo Achillis should be covered by a thin layer of cotton-wool. In a few very thin patients it may be necessary to cover lightly the bony points around the elbow. The use of cotton-wool under the plaster diminishes the immobilization of the soft tissues and, because it quickly becomes saturated with the discharge of the wound, it increases the smell, so that the plaster cannot be kept on as long as is necessary.

After-treatment

The plaster cast must be left in position as long as the smell is not excessive and the plaster does not become soft and wet. The patient nearly always runs a temperature for a few days after the operation, showing that a local fight against infection is going on at the site of the fracture. In a total of 1,073 patients treated in my clinic removal of the plaster for a true clinical infection was necessary in only 0.75 per cent. of cases. On these occasions it was found either that a cavity was badly drained or that cellulitis had developed.

Advantages and Drawbacks

The immediate benefits of the plaster treatment are absence of pain, rapid disappearance of shock, elimination of sleepless nights, and return of appetite. The absolute rest of the fractured limb promotes good normal union. The failures can all be attributed to faulty technique: the surgeon had either tried to save a limb with insufficient blood supply or had not excised enough bruised tissue.

The most common complications are cellulitis and lymphangitis. Diagnosis and treatment are usually easy. If in a case of fracture treated by the closed method there are a rise of temperature, loss of appetite, pain at the site of fracture, sensation of tension, and regional adenitis the plaster must be removed. Nearly always cellulitis, or more rarely a primary lymphangitis, is found. The usual treatment for cellulitis is carried out. The intermuscular planes are widely opened up, the whole of the affected area is exposed, and the cavity drained with sterile absorbent gauze. The plaster is renewed either immediately or at most two or three days later. I have had to remove the plaster from eight of my 1,073 patients for this reason.

Gas Gangrene

In the case which is developing gas gangrene the symptoms are immediately more striking. The patient says he cannot sleep, he has no appetite, his tongue is dry, he is restless, and from the first moment his pulse rate is raised. Locally there is increasing pain in the region of the wound, heat, and tension. The foot or the hand becomes rapidly cold, in a few cases with oedema, and the digits cannot move. With this combination of general and local symptoms the plaster should at once be removed and the wound opened up without waiting for evidence of gas beneath the skin. Bold resection of the skin and devascularized tissues with separation of the intermuscular spaces followed by immobilization has been successful in several cases transferred to my clinic for treatment.

This complication, which in my patients occurred once in 1,073 cases, generally develops within the first two or three days after the infliction of the wound. For this reason it is essential to be extremely vigilant during this time and not to encase in plaster fractures in which there is doubt about the vitality of the tissues. In open fractures treated by other techniques with the object of watching for the appearance of gas gangrene it is important also to diagnose the condition before bubbles of gas are seen, relying on the general state and the local signs. No time is lost, then, if vigilance is sufficient in the cases treated by the closed method; and, as I have said before, if the technique is correct the complication is rare. In the majority of cases of gas gangrene that I have seen either the limb has been preserved in the presence of vascular lesions that interfered with the normal circulation or the wound had been sutured.

Plaster Windows

I am convinced that making a window in a plaster case neutralizes all the value of the plaster treatment. Such an opening interferes with the local circulation at the site of fracture, sometimes producing great oedema, disturbs the immobilization of the soft tissues and, if the opening is large, the immobilization of the bone fragments. Those cases of compound fractures which cannot be closed under plaster because of anxiety about the vitality of the tissues are best treated by continuous extension with the Thomas or Braun splint.

Special Benefits of the Closed Method for the Treatment of War Fractures

The widespread use of plaster-of-Paris in Catalonia was brought about by the exigencies of war, but the reasons which compelled me to advocate this method were the following:

1. It is the best complement to the technique of local excision of the wound as a means of avoiding infection.
2. It allows immediate radical operation of fractures, because after the operation the patient can be moved without danger and evacuated long distances.
3. It permits a perfect drainage of the cavities of the wound because the plaster acts by suction of the discharges absorbed by the gauze. For this reason I do not use petroleum jelly, which diminishes absorption.
4. It avoids the dehydration and loss of heat that occur in large wounds if the open method is used, which induces a condition of shock.
5. If the plaster is correctly applied—that is, directly on the skin without the interposition of cotton-wool and with the limb in correct position—displacement of the fragments does not occur. Frequently the first plaster achieves the desired position, and at each change of plaster the fragments are maintained in the position that was obtained on the operation table. In other cases a better reduction must be secured after ten or twelve days when the danger of severe infection has passed, because the emergency of the first treatment did not permit one to leave the fragments in a sufficiently good position. This can be done (with x-ray control) at the base hospital far from the danger zone and without urgency.

Confirmation of the Value of this Technique

In the first place I must mention our results in Spain. Mine have been published in my book on the treatment of war wounds, and shortly Colonel D'Harcourt, chief surgical consultant to the Republican Army, will publish in an English journal the results obtained in 5,000 cases treated under his direction in the military hospital in Barcelona. As I have mentioned earlier, I had one case of gas gangrene in over 1,000 cases of compound fractures, and Colonel D'Harcourt had twenty in 5,000. It is necessary to take into account the fact that I was able to operate immediately in many of the patients, and that in others I was the first surgeon who handled them. Colonel D'Harcourt, on the contrary, was obliged to treat many wounded soldiers admitted to the military hospital in a bad condition after having been inadequately treated previously or treated on wrong lines. In view of the small number of cases of gas gangrene in the recent statistics of the Catalan hospitals there has grown up a doubt as to whether gas gangrene occurs in our country in the proportion in which it is found in other countries of Europe. On this point I can affirm, though I have no statistics available, that the number of cases of gas gangrene in our war was extraordinarily high, but they occurred only in places where proper treatment was not used. It is only necessary to glance at the *Revista de Sanidad de Guerra* to see the cases reported there. For example, in an article by Dr. V. Goyames on transfusion of blood in two hospitals in Madrid, sixty-one transfusions were given for gas gangrene. In Madrid also there was a hospital devoted entirely to the treatment of this condition. I have information that gas gangrene was a frequent complication among the wounded of General Franco's army, and appeals were made to certain countries to send quantities of anti-gas-gangrene serum for treatment. And both the Republican Army and the Army of General Franco fought on the same soil and under the same climate. I maintain, therefore, that if in Catalonia gas gangrene disappeared, this was due to the technique which our surgeons employed.

Confirmation and Opinion of Foreign Surgeons

As is well known, at the end of the war in Catalonia a retreat from the country of nearly half a million persons took place. Among these refugees were over 10,000 wounded, nearly all with wounds of the extremities, who went to France. Numbers were evacuated in the army ambulances, but many thousands went across the frontier walking with plasters that covered and immobilized open fractures. Several hospitals were organized in France attended by surgeons of "La Santé Militaire Française," who did all they could to deal with this unprecedented influx of wounded. During the early days of the retreat the French doctors were amazed by the arrival of thousands of soldiers—many on foot—in bad general condition due to fatigue and hunger, with plasters smelling offensively, under which were extensive wounds. Many amputations of urgency were performed because the surgeons feared the development of gas gangrene.

A short time later reports were presented to medical societies in different parts of France on the observations made by these surgeons, who previously had little experience of the closed method of treating compound factures. The general consensus of opinion was that the results were eminently satisfactory, serious infections being extremely rare.

Dr. M. Arnaud reported to the Academy of Surgery in Paris (May, 1939) the results he had seen in 800 wounded from Catalonia, the majority of whom had been treated by the closed method. He was surprised to see only one case of gas gangrene.

All the wounded who came to France during the evacuation of Catalonia arrived after many days of travelling from one place to another under the psychological and material conditions of an army in full defeat, which in every war always produce the greatest mortality. In spite of these bad conditions the testimony of these French military surgeons is proof of the value of this method.

I hope that this evidence will be sufficient to encourage my British colleagues, and I am sure that the result of treatment of compound fractures in the present war will be very different from that of the great war.

⁂ The discussion of Dr. Trueta's paper is reported at page 1106 this week.

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ANAESTHESIA IN WAR TIME

BY

R. R. MACINTOSH, M.A., M.D., F.R.C.S., D.A.

Nuffield Professor of Anaesthetics, University of Oxford

AND

FREDA B. PRATT, M.D., D.A.

First Assistant to the Department of Anaesthetics,
University of Oxford

Although the anaesthetic problems peculiar to modern warfare remain unformulated, the basic principles of anaesthesia, whatever these problems may be, will remain unaltered. These principles are the maintenance of a clear airway, the recognition of the signs of anaesthesia, and the avoidance of an overdose of the anaesthetic drug. The problems will undoubtedly include (1) the supervision by the anaesthetist of several unconscious patients at the same time; (2) the anaesthetizing of shocked or exsanguinated patients, and of patients heavily morphinized; (3) the danger of fire and explosion if explosive gases (ether, vinesthene, or cyclopropane) are used; and, because of the physically depressed state of the patients and the lack of skilled anaesthetists, (4) the problem of applying restorative measures to patients *in extremis*.

Experience of the last war has suggested that air raids will result in casualties so numerous as to make their adequate treatment impossible. The medical practitioner with any surgical knowledge will be pressed into surgical duties, so that the few delegated to anaesthesia will be responsible for the supervision of more than one anaesthetized patient. In this task the anaesthetist will obviously be helped if he can call on intelligent though only partially trained assistants. To prepare for this a series of fifteen lectures on the basic principles of anaesthesia was given at Oxford at the outbreak of war. Among those who attended were dental practitioners (the B.D.A. was circularized locally and the response was encouraging), retired medical practitioners, and laboratory attendants experienced in anaesthesia in animals. A similar series of lectures could be arranged at any other large centre to ensure that in an emergency the anaesthetist could have the assistance of helpers with some knowledge of the care of the unconscious patient.

Choosing the Anaesthetic

Too much stress has been laid on the use of particular anaesthetic drugs for particular conditions. While it is undeniable that the specialist can attain refinements of anaesthesia with drugs such as cyclopropane and pentothal, this fact has overshadowed the truth that safe anaesthesia can be furnished by so-called old-fashioned means by comparatively inexperienced anaesthetists provided they apply a sound knowledge of the basic principles of anaesthesia. During the past few years there has been so much talk of new anaesthetic drugs and techniques that many doctors are hesitant about offering their services as anaesthetists in war time because they know nothing about "these new-fangled anaesthetics."

It cannot be emphasized too strongly to the occasional anaesthetist that safety in anaesthesia does not lie in attempting a multitude of techniques or in learning the actions of a wide range of drugs but in gaining experience in the use of one anaesthetic agent. The drug chosen is of minor importance provided it is administered skilfully. We know of hospitals in the United States in each of which a different type of anaesthetic drug is used almost exclusively. In one hospital in New York City nothing but spinal anaesthesia is employed for general surgical operations, including thyroidectomy and mastectomy. In another hospital cyclopropane only is used, while a third favours nitrous oxide, and in a fourth practically nothing but ether is employed. The anaesthetists of these hospitals extol the merits of the particular drug they use, yet it is striking to find a negligible variation in the gravity or number of complications caused by the anaesthetic either during the operation or in the post-operative period. The reason is that each anaesthetist has mastered his own particular technique. An inexperienced anaesthetist would soon encounter difficulties and dangers if he attempted similar methods. The specialist anaesthetist should be competent to provide any form of anaesthesia required. The occasional anaesthetist is recommended to use what opportunity he has to master one drug only—and that drug should be ether.

Merits of Ether

Whichever of the many techniques or drugs an anaesthetist may favour he will change to ether if he encounters difficulties which prevent him providing satisfactory operating conditions. This drug, discovered almost a hundred years ago, has never lost its pride of place as the safest and most reliable of anaesthetics. A further tribute to the safety of ether is that in other countries ether is administered thousands of times annually by nurse anaesthetists. Although these nurses have had special training there is no other anaesthetic drug with which they could be allowed so much freedom. Often the method is somewhat crude, but because of the safety of ether it can seldom be said that the life of the patient is endangered.

Induction with ether, if enough time is allowed, need not be unpleasant. If it is rushed, however, the feelings experienced by the patient are disagreeable and provoke resistance. If a quick induction is required an intravenous injection of evipan may be given. The technique of continuous intravenous barbiturate anaesthesia requires special training, is fraught with certain difficulties and dangers, and is not to be recommended to the occasional anaesthetist. A " one-shot " injection of evipan, however, is a simple affair, quickly learnt, and of great value. For an adult 0.2 to 0.5 gramme, according to the anaesthetic resistance of the patient, provides a pleasant and quick method of producing unconsciousness deep enough to allow ether anaesthesia to be superimposed. As soon as the injection is finished the administration of ether is begun, and it is continued as rapidly as the patient will tolerate it. Because of its rapid excretion the effect of the small dose of evipan is very transient. After a few minutes the depth of unconsciousness is attributable for all practical purposes to the ether used. Alternative drugs to ensure a rapid induction are vinesthene and ethyl chloride. Provided the practitioner is familiar with the use of chloroform a mixture of chloroform and ether may be employed. Whatever drug is chosen for induction a change is made to ether immediately respiration becomes automatic. Whether ether is given by Clover's inhaler, the " open " method or by bubbling air, oxygen, or gas-and-oxygen over or through ether matters little.

From personal experience (R. R. M.) in the hospitals in Spain during the Spanish War we learnt the difficulties of anaesthetizing unprepared patients, particularly since no nitrous oxide, oxygen, or in fact any anaesthetic material beyond a bottle of ether was available. These difficulties were emphasized in operations on the head and neck. Since atropine was not obtainable we were greatly handicapped by the secretion of a large amount of mucus. Atropine should be given before every operation in which ether is to be administered. If given subcutaneously it takes ten to fifteen minutes to act. Given intravenously it becomes effective almost at once. The only anaesthetic apparatus available was an outfit consisting of a laryngoscope and endotracheal tubes which we had taken with us.

The Endotracheal Tube

By passing an endotracheal tube and attaching it to an ordinary tin (such as a container for motor oil) in the top of which two or three small holes had been bored, a simple apparatus (Fig. 1) was made which enabled us to fulfil the essentials of anaesthesia for the repair of wounds around the head and neck region—that is, the maintenance of safe anaesthesia without encroaching on the part being operated upon. An almost identical technique was originally suggested by Flagg.

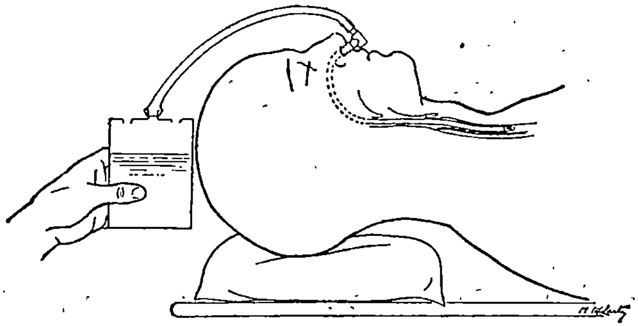


FIG. 1.

If the anaesthetist has time to spare, let him devote it not to learning how to administer different anaesthetic agents but to learning how to pass an endotracheal tube. The ability to do this will increase his sphere of utility enormously. Early experience should be gained in the post-mortem room. Later by passing a laryngoscope at the completion of any operation he can familiarize himself with the view of the larynx in the living. Exposure of the cords is facilitated by an adequate depth of anaesthesia, the preliminary spraying of the throat and larynx with cocaine, and the introduction of a support under the head in such a way as to flex the neck and extend the head (Fig. 2).

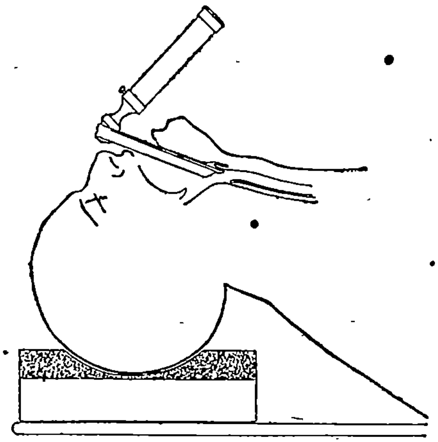


FIG. 2.—Position for laryngoscopy.

The importance of the maintenance of a free airway cannot be over-estimated. Once unconsciousness is reached this duty devolves on the anaesthetist. A free airway can generally be maintained by pressing the angle of the jaw forward so as to lift the tongue out of the laryngeal entrance, but once anaesthesia is deep enough the introduction of a metal airway (Waters's or Connell's) will do much to ensure safety and to lessen the work of the anaesthetist. Hospitals are advised to have a plentiful supply of airways. Other essential equipment includes Mason's gags and tongue forceps. Emergency substitutes for the latter are towel clips or large safety-pins. Since any patient who has to be anaesthetized for an emergency operation may have a full stomach the incidence of vomiting during anaesthesia will be increased. Swab-holders for sponging out the throat should therefore be at hand.

The Shocked Patient

It is essential to recognize that the shocked, exsanguinated, or heavily morphinized patient is already well on the way towards anaesthesia. Such depressed patients *could*, if necessary, be anaesthetized safely by the specialist with any type of anaesthetic—cyclopropane, evipan, ether, nitrous oxide, etc. He recognizes that the required depth of anaesthesia is achieved, in a patient depressed by any means, by a much smaller dose of the anaesthetic drug than would be needed for the same patient in normal health. Here again the occasional anaesthetist is safer with ether. If an overdose of this anaesthetic is given it is probable that removal of the mask and immediate institution of artificial respiration will result in prompt recovery. There is not the same safety margin with any other anaesthetic agent. If a patient has been heavily morphinized little anaesthetic will be needed subsequently, since morphine itself, if given in sufficiently large dosage, will provide full anaesthesia. The fact that major operations such as appendicectomy or hysterectomy have been performed under morphine alone emphasizes the part it plays in diminishing the subsequent amount of anaesthetic needed to produce the desired stage of unconsciousness.

Treatment of Respiratory Failure

Respiratory failure is an emergency which will often have to be faced in war-time anaesthesia. By shock or exsanguination or heavy morphinization the respiratory centre is depressed, and further depression from an overdose of an anaesthetic or deprivation of oxygen will easily result in respiratory failure. If each patient cannot have the undivided attention of a skilled anaesthetist the incidence of this emergency will necessarily be increased. The anaesthetist here must use his hands and not rely on drugs. He must remove the anaesthetic mask, confirm that the airway is clear, and supply oxygen. CO_2 plays no part in the treatment of patients suffering from respiratory failure. The Oxford inflator is the simplest and most effective way of inflating the patient's lungs with oxygen. If this small piece of apparatus is not available some other method of artificial respiration must be instituted without delay.

Chloroform

Although we subscribe to the view that the use of chloroform is rarely justified in peace time we are not satisfied that it will not have a place in war-time surgery. Since it is non-inflammable and portable, and its vapour is comparatively non-irritating, it will inevitably be used by many who would diligently avoid it in hospital practice in peace time. There are four well-recognized causes of death from chloroform.

1. Writers during the last century describe sudden death from psychological causes during induction or early in operation. Half the deaths from chloroform have occurred within fifteen minutes of the start of induction, and these sudden deaths have rightly instilled fear into the anaesthetist. Adrenaline can produce ventricular fibrillation in man and animals. Chloroform sensitizes the organism to adrenaline, so that a smaller dose will produce this result. There is now a strong clinical impression that suppressed fear of anaesthesia or operation leads to liberation of the patient's own adrenaline into his blood stream in quantities sufficient, if the patient is susceptible, to produce ventricular fibrillation in a heart sensitized by chloroform. Deaths from this cause will occur independently of the skill and experience of the anaesthetist. These sudden deaths occur notoriously in the fit nervous patient who is dreading operation. Since it can reasonably be suggested that the patient from the battlefield or air raid who is shocked and exhausted will suffer not from excess but from depletion of adrenaline, it is possible that death from ventricular fibrillation is unlikely to occur during chloroform anaesthesia in war casualties. In this connexion it should be remembered that fear immediately before operation can now be overcome by the use of basal anaesthetics, of which avertin, nembutal, and evipan are familiar examples. Basal anaesthesia should therefore protect the patient against this cause of sudden death.

2. Death may occur from the direct action of strong chloroform vapour (above 4 per cent.) on the cardiac musculature of susceptible patients. The danger from too strong a vapour can be avoided by the use of appropriate apparatus or by taking care not to pour too much chloroform on to the mask.

3. There may be death from paralysis of the respiratory centre by overdosage. This is heralded by increasing depression of respiration, and can be avoided by paying attention to respiratory signs. Should it occur artificial respiration must be instituted at once.

4. Death may also arise from delayed chloroform poisoning. This grave complication is more likely to happen in exhausted patients, in those depleted of tissue fluids, and in those who have been deprived of food for some time. The danger is intensified with increasing debility of the patient and with the amount of chloroform given.

Vinesthene

Vinesthene is becoming increasingly popular as an anaesthetic for the trivial operations of general practice. Although this drug has been found unreliable in producing the deep muscular relaxation often required for abdominal surgery, it has a sphere of usefulness in extra-abdominal surgery which may be of particular value in war casualties. Its advantages include portability, quick induction and recovery, and comparative freedom from after-effects. The excessive salivation which may result from its use can be prevented by atropine.

An invitation from the Queen of Italy has been conveyed to Viscount Dawson of Penn by the British Ambassador in Rome for the visit to Italy of a doctor from Great Britain for the purpose of studying a method of treating encephalitis lethargica which has been discovered by a distinguished Italian scientist, Signor Giuseppe Panegrossi. The method of treatment in question is known to some extent in this country, and is in fact being used at the Northern Hospital (London County Council), where an encephalitis unit is situated. Lord Dawson suggested that Dr. G. A. Borthwick, the medical superintendent of that hospital, should accept the invitation, and the London County Council has given Dr. Borthwick the necessary leave with pay.

RELAPSES AFTER SULPHONAMIDE CURE OF GONORRHOEA

BY

A. J. COKKINIS, M.B., B.S., F.R.C.S.

Surgeon, Emergency Medical Service; Surgeon, Wembley Hospital; Assistant Director, Venereal Disease Department, St. Mary's Hospital

AND

G. L. M. McELLIGOTT, M.A., M.R.C.S., L.R.C.P.

Director, Venereal Disease Department, St. Mary's Hospital

It is now established that three sulphonamide compounds —sulphanilamide, sulphapyridine (M & B 693), and uleron—can produce apparent cure of gonorrhoea in a few days. A year ago we showed that the first of these —sulphanilamide—needs the help of immunity to yield its optimum effects, having noted that better results are obtained when it is started on the eighth to the tenth day of symptoms instead of from the onset, and when it is combined with vaccine. The same policy of waiting has been found to increase the curative value of uleron, although this compound seems to be less effective than sulphanilamide.

After the introduction of sulphapyridine it became obvious that this is a more potent anti-gonococcal sulphonamide than the others, and articles have appeared which claim that it does not need the help of immunity but may be used from the onset of gonorrhoea with almost complete certainty of eliminating the infection. At St. Mary's Hospital we are not convinced that this optimistic claim will be confirmed by experience. While gladly recognizing the great potency of sulphapyridine, we have not yet abandoned its predecessors, and are still exploring ways of combining chemotherapy with immunotherapy in the hope of improving the chances of *permanent cure.* We had intended to publish the final results of our work with all three compounds in the near future, but owing to the present emergency this publication has had to be postponed.

In the present article, the preparatory material for which was collected before the onset of the war, we intend to give prominence to an aspect of chemotherapy which had for some time caused us considerable disquiet and which has an important bearing on the question of permanent cure (as distinct from elimination of symptoms). We refer to the occurrence of *late relapses,* weeks or months after apparently complete cure and after negative tests. The significance of such relapses, if they prove to be frequent, is obvious. Unfortunately they are becoming frequent enough, in our experience, to cause us real anxiety and to check the early enthusiasm with which we hailed the curative properties of these compounds in general and of sulphapyridine in particular.

It is easy to close one's eyes to unpleasant developments in what at first promised to be a perfect outlook, and to dismiss these cases as reinfections, however strenuous the denials of fresh exposure. But when these patients began to return to the clinic in large numbers it became obvious that some of them must be telling the truth and were, in fact, genuine relapses. With further experience we found that these latter cases present a clinical picture usually quite different from that of a reinfection, and we are now able to discriminate between them without having to rely solely on the patient's veracity. Quite recently (July, 1939) we analysed our records of over 1,200 male and 200 female patients treated with sulphonamide compounds long enough ago to provide reliable information on remote results. This analysis reveals an incidence of late relapses sufficient to render unreliable any statistics of results based on a relatively short follow-up.

Significance of Late Post-chemotherapy Relapses

These late relapses have a significance quite distinct from that of the early relapses with which we have all been familiar since the early days of chemotherapy. The early relapse a few days after a sulphonamide course or after the first provocative tests is an immediate warning that infection is still present and that treatment must be continued. But a patient who has passed several tests and remains well for months, only to relapse ultimately, often believes himself cured and may indeed have been discharged. Such a case harbours the gonococcus, which can be transmitted during the quiescent stage, and especially during the early and often inconspicuous stage of the actual relapse. Indeed, the early signs may be so mild that the patient may not reappear until complications are present. Most significant of all is the influence these late relapses must exert on the reliability of tests of cure, on the length of the period of follow-up, and on the final discharge of the patient. Our own experience, as shown in this article, has made us reluctant to give any pronouncement of permanent cure at this stage of the new therapy. The most we feel justified in saying to a patient is that he is probably cured if he has passed exhaustive tests and at least a six-months uneventful follow-up. There are several reasons why this cautious attitude should be rigidly adopted in the conditions which prevail during war time.

LATE RELAPSES IN MALES

Recognition and Clinical Course

In males we employ the term "late relapse" when symptoms return three weeks or more after a successful sulphonamide course and after at least one negative series of tests. This critical period has been adopted because appreciable differences exist in the manifestations of relapses before and after it. The early relapse occurs usually within a week of the end of chemotherapy or of the first test, and resembles the original attack in its acute onset, profuse discharge, cloudy urine, and the rapidity with which pus cells and gonococci crowd the smears. The late relapse is usually quite different. Although it may be provoked by a late test or by alcohol, most of our cases passed several tests quite successfully and then relapsed for no obvious reason weeks or months afterwards. What usually happens is that the patient one morning discovers a slight urethral moisture which in a few days becomes a scanty mucoid discharge. The urine is clear or shows specks or a slight haze, while the smears contain scanty pus cells and either no gonococci or very few groups. The prostatic beads, after being quite negative, may now show pus. Sometimes pus cells and even gonococci appear in the prostatic secretion some days before the clinical relapse; but these "threats" do not always materialize, and the next prostatic test may be quite negative.

This mild urethritis may continue for a week or two and then subside. More often the discharge gradually becomes purulent, the urine more hazy, gonococci more plentiful, and a definite relapse is established after a week or so. Some of our cases, however, developed no discharge, but showed a cloudy urine with prostatitis or basal cystitis; while a few came with other complications, such as periurethritis, epididymitis, or arthritis, but without a coexisting urethral relapse.

The outcome of these relapses has varied. Some cleared up with irrigations and vaccine, while most responded to sulphonamides as readily as the original attack. A number, however, resisted chemotherapy this time, or, after again responding, returned with another relapse. The treatment of these latter cases is a problem we have not as yet solved.

General Incidence of Late Post-chemotherapy Relapses

To discover this incidence an analysis has been made of 1,268 male cases of gonorrhoea the chemotherapy of which was completed more than six months previously. Of this total, 263 either failed to respond to the treatment or defaulted before tests, thus leaving a net total of 1,005 patients who remained well more than three weeks after their last sulphonamide course and who passed one or more series of tests. Of these cases, 118 (12 per cent.) have so far returned with late relapses (112 with one relapse, five with two, and one case with three relapses).

This figure of 12 per cent. cannot be an accurate estimate of the true relapse rate, since a large number of the 1,005 cases defaulted during the follow-up, and some of these must have relapsed subsequently. Another way of computing this incidence is to apportion the relapses into groups according to the time of their occurrence, and then to calculate the relapse rate for each period on the total cases whose follow-up extends into it (Table I).

TABLE I.—*Incidence of Post-chemotherapy Relapses at Various Stages of Follow-up*

Time Group (Period of Follow-up)	Followed-up Cases reaching Each Period	Late Relapses in Each Period	Late Relapse Rate for Each Period
4th week	1,005	20	2%
2nd–3rd month ..	948	48	5.1%
4th–6th „	652	41	6.3%
7th–9th „	173	11	6.4%
Over 9 months ..	68	5	7.3%

The full late relapse incidence, on this computation, is arrived at by adding together the relapse rate of all five groups, and works out at 27 per cent. It may be argued that this estimate is also inaccurate and that it exaggerates the chance of relapse, inasmuch as patients are more likely to return if they develop a relapse than if they remain well. This argument is incontrovertible. The true incidence, therefore, lies somewhere (perhaps halfway) between these two estimates—that is, between 12 and 27 per cent.

Incidence of Reinfections

The above 118 cases are in our opinion all genuine relapses. Another 100 of the 1,005 cases also returned with gonorrhoea in the same period: of these, eighty-seven were definite reinfections, while the other thirteen might have been relapses or reinfections, but for the purposes of this article are included with the latter. The time incidence (between end of chemotherapy and return of symptoms) of both relapses and reinfections is compared in Table II, which reveals another noteworthy difference between them.

TABLE II.—*Comparison of Time Incidence of Late Relapses and Reinfections*

	Under 3 Months	4th–6th Month	7th–9th Month	Over 9 Months
Late relapses (125) ..	68 (54%)	41 (33%)	11 (9%)	5 (4%)
Reinfections (100) ..	23 (23%)	35 (35%)	26 (26%)	16 (16%)

Detailed Analysis of Relapses and Discussion

A special analysis of our material was made to provide answers to the following questions, which are of obvious importance: (1) Does the incidence of late relapses vary with individual sulphonamides? (2) Is this incidence diminished by delaying the chemotherapy? (3) What is the influence of dosage and period of administration? (4) Is the relapse rate diminished by adjuvant treatment—for example, vaccine? (5) Are cases which clear up rapidly less likely to relapse than those which do so slowly or only after multiple courses? (6) Are there periods when relapses are more likely to occur? (7) What proportion of late relapses show gonococci? (8) How do these relapses affect provocative and other tests?

Some of the above questions are answered in Table III, which gives our late relapse figures with sulphanilamide, sulphapyridine, and uleron, begun at various stages of early gonorrhoea. For purposes of comparison the early relapse figures are also included. The late relapse figures (last column) are, as already stated, probably lower than the true incidence, and might be made more accurate by increasing each figure by half its total.

1. In answer to the first question it will be seen that *our male (uncorrected) late relapse rate with sulphapyridine (18.5 per cent.) is nearly two and a half times that with sulphanilamide (7.8 per cent.).* On the other hand, the early relapse rate with sulphapyridine (8.6 per cent.) is less than half that with sulphanilamide (17.7 per cent.). This reversal of the ratio, together with the more rapid and certain immediate curative action of sulphapyridine, provides a negative answer to question No. 5. It may well be that the longer treatment and more frequent need for multiple courses with sulphanilamide explain the lower incidence of *late* relapses after this drug. Our late relapses with uleron show a rate very similar to that with sulphapyridine, but the uleron cases are too few for this resemblance to have any significance.

2. This table gives a positive answer to the second question, as it *shows a fall in both early and late relapses (with all three drugs) when the chemotherapy was delayed until after the first week of symptoms.* This fall is very pronounced in the sulphanilamide group, the figures of which provide justification for the policy of delay with this drug advocated by us a year ago. The increased relapse rate of very chronic cases is associated with chronic lesions—for example, urethral stricture and chronic prostatitis. With sulphapyridine the early relapse rate is again more than halved when chemotherapy is delayed to the second week, but the fall in the late relapse rate is relatively negligible. A very interesting difference is shown in the sulphapyridine cases treated after the second week, depending on whether or not the patient had had previous therapy with another sulphonamide. According to Table III previous (therefore unsuccessful) treatment with other compounds has raised the early relapse rate from 3 per cent. to 11.8 per cent. and the late relapse rate from 15.1 per cent. to 32.3 per cent. These figures suggest that a high proportion of such cases were infected either with a sulphonamide-resistant strain of gonococcus or with one which

Table III.—*Showing Early and Late Relapse Rate after Sulphonamide Therapy*

Compound	State of Gonorrhoea when Compound Begun	Gross Total of Cases*	Net Total†	Early Relapses‡	Early Relapse Rate	Late Relapses‡	Late Relapse Rate§
Sulphanilamide	1st week	216 (all Gc.+)	170	53 (all Gc.+)	31.2%	20 (16 Gc.+)	12%
	2nd week	230 (all Gc.+)	196	27 (23 Gc.+)	13.8%	12 (9 Gc.+)	6.1%
	3rd week to 12th month ..	248 (188 Gc.+)	227	26 (22 Gc.+)	11.5%	10 (5 Gc.+)	4.4%
	After 12th month	66 (25 Gc.+)	57	9 (3 Gc.+)	15.8%	9 (1 Gc.+)	15.8%
Total sulphanilamide cases		760 (659 Gc.+)	650	115 (101 Gc.+)	17.7%	51 (31 Gc.+)	7.8%
Sulphapyridine	1st week	168 (all Gc.+)	128	13 (all Gc.+)	10.2%	24 (17 Gc.+)	18.7%
	2nd week	142 (all Gc.+)	112	5 (all Gc.+)	4.5%	17 (14 Gc.+)	15%
	After 2nd week: Sulphapyridine only ..	47 (39 Gc.+)	33	1 (Gc.+)	3%	5 (3 Gc.+)	15.1%
	Sulphapyridine after other sulphonamides	51 (26 Gc.+)	31	6 (all Gc.+)	11.8%	10 (6 Gc.+)	32.3%
Total sulphapyridine cases		408 (375 Gc.+)	304	25 (all Gc.+)	8.6%	56 (40 Gc.+)	18.5%
Uleron ..	1st and 2nd weeks	46 (all Gc.+)	26	22 (all Gc.+)	84.6%	6 (all Gc.+)	23%
	After 2nd week	54 (34 Gc.+)	34	20 (16 Gc.+)	58.8%	5 (1 Gc.+)	15%
Total uleron cases		100 (80 Gc.+)	60	42 (37 Gc.+)	70%	11 (7 Gc.%)	18%

* All these are cases of proved gonococcal infection, but cases in which gonococci were seen at the start of chemotherapy are given in brackets.

† After deducting early defaulters and failures, and including only cases which passed at least one series of tests and a follow-up of at least three weeks.

‡ Cases which relapsed more than once are counted as only one relapse. Relapsed cases in which gonocccci were actually seen are shown in brackets, but gonococcal infection was suspected and probably present in most of the others.

§ For reasons given in the text these figures are probably considerably below the true relapse rate.

had acquired sulphonamide-fastness through the previous chemotherapy. The high early relapse rate with uleron is a result of treatment with repeated short "stosses" necessitated by its tendency to cause peripheral neuritis if given in longer courses. Both the early and late relapse figures, however, are lower in cases treated after the second week of the disease.

3 and 4. These questions cannot be answered fully in this article. It may be pointed out, however, that only cases treated after the first week of gonorrhoea were given vaccine as a routine, and this may in part be responsible for the lower incidence of relapses in this group. On the other hand, it must be stated that most of the relapsed cases in this group had had some vaccine therapy. Thus far our vaccine dosage has been rather on the small side, and we are now experimenting with much larger doses in the hope of diminishing the relapse rate. With regard to dosage and period of administration of the drugs themselves, an analysis of the late relapses gives the following figures. Of the fifty-one late relapses after sulphanilamide only 18 per cent. had less than what we consider the minimal effective quantity of 56 grammes in fourteen days, while 61 per cent. had over 60 grammes and 18 per cent. over 80 grammes in one course of fourteen to twenty-one days. Of the fifty-six late relapses after sulphapyridine only 20 per cent. had less than a "minimal effective" course of 30 grammes in ten to twelve days; 36 per cent. had over 40 grammes and 9 per cent. over 60 grammes of this powerful sulphonamide in one course of fourteen to twenty-one days. These figures show that inadequate dosage does not account for more than a small proportion of late relapses, and that such relapses can occur after very full courses of both sulphanilamide and sulphapyridine. In other words, a quantity and a period which produce complete clinical cure may not suffice to eradicate the gonococcus, and if there is a quantity and a period which can be relied upon to do this they must be in excess of the very large dosage taken by some of our relapsed cases.

5. As far as can be done at present, the fifth question has been answered (with the first question).

6. Table I suggests that the chance of relapse remains fairly constant through the first year after chemotherapy. In view, however, of the probability that relapsed cases are more likely to return at a late stage of the follow-up than unrelapsed ones, it is likely that in actual fact there is a gradual fall in the chance of relapse with the passage of time.

7. The proportion of relapses in which gonococci were seen is given in Table III, and works out at 81 per cent. of late relapses of cases treated in the first two weeks of gonorrhoea and 36 per cent. of cases treated at a more chronic stage. These figures are based mainly on the results of smear examinations, and it is likely that a greater use of cultures would have shown gonococci in many cases with negative urethral or prostatic smears.

8. The occurrence of so many late relapses throws considerable doubt on the reliability of provocative and other tests of cure in cases treated by chemotherapy. In the period when the cases under review were treated our usual practice was to start the first series of tests one to two weeks after the end of the chemotherapy. The series comprised (*a*) examination of prostatic beads, (*b*) complement-fixation test, (*c*) provocative gonococcal vaccine (400 to 500 millions), (*d*) urethroscopy, (*e*) massage of urethra on metal sound, (*f*) alcohol. Prostatic tests were repeated at intervals of two to four weeks, and larger injections of vaccine (500 to 1,000 millions) given at three-monthly intervals.

Whatever the value of these tests may have been in pre-sulphonamide days, the fact that 118 of our cases relapsed after successfully passing at least one series of tests (seventy-one of them passed two or more) shows that *negative tests are not proofs of cure in cases treated by chemotherapy*. And yet the fact that 20 per cent. of our late relapses were definitely provoked by vaccine, bougie, or alcohol as late as three to six months after apparently complete cure shows that these tests are still of value. In the present state of our knowledge they cannot be dispensed with, but we submit that great caution should be exercised in the interpretation of their results. Particularly we wish to stress the value of repeated examinations (including culture) of the prostatic secretion, as we have reason to believe that many post-sulphonamide relapses are started by gonococci in the prostate which were rendered only temporarily inactive.

A year ago we stated that a positive gonococcal complement fixation does not mean that a patient is uncured. Now we are in a position to add that negative G.C.F. tests do not indicate that a patient is cured. Of seventy-nine late relapses whose G.C.F. test was not vitiated by recent vaccine no fewer than thirty-four relapsed after a completely negative result. It may indeed be of some significance that most of these thirty-four cases never developed a positive fixation at all.

LATE RELAPSES IN FEMALES

In pre-sulphonamide days it was generally admitted that in most cases the female urethral infection was comparatively easy to eradicate, whereas the deep racemose glands of the cervix were apt to harbour gonococci over long periods. Bourne has recently challenged this hypothesis by histological examination of chronically infected cervices, in most of which he found that the inflammatory reaction was superficial. In spite of these findings one cannot rule out the possibility of temporarily inactive gonococci being able to lurk in these glands without provoking an inflammatory reaction.

In most cases of proved female gonorrhoea gonococci are demonstrated only in the urethral discharge in spite of the fact that signs of cervicitis are usually present. When one considers that secondary infection from the vagina of an inflamed endocervix is inevitable, and that these vaginal organisms are able to outgrow the gonococcus, one can appreciate how a gonococcal cervicitis may in many cases be effectively masked. In view of the excellent blood supply of the cervix it is reasonable to suppose that cervical gonococci yield to sulphonamide therapy as readily as do those in the urethra, in spite of the fact that the secondary infection of the cervix with vaginal organisms, most of which are resistant to sulphonamides, appears to be unaffected. For this reason local treatment of the vagina, and in some cases the cervix itself, is nearly always necessary. That persistent cervicitis after chemotherapy is not due to the gonococcus is further suggested by the fact that in such cases no husband has so far been reinfected by his wife.

The difficulty of reliably ascertaining the relapse rate in women is fully appreciated, and the role of the laboratory animal must always be filled by the male. Janet's dictum that the best culture medium for the gonococcus is the uninfected male urethra is to-day as true as ever.

Though we have now treated many hundreds of cases of female gonorrhoea with sulphanilamide and sulphapyridine a large number have been excluded from this analysis on the ground that they did not show gonococci immediately before the beginning of chemotherapy or that they were early defaulters. The almost invariable secondary cervicitis has made it well-nigh impossible to distinguish between failures and early relapses, and we have classed as late relapses only those cases which showed at least two sets of gonococcus-negative smears and cultures and which have again shown gonococci more than one month after chemotherapy. A minimum follow-up of six months has been insisted on where possible, and in no case has provocation been carried out before the end of the third month. The results of an analysis of 210 female cases are given in Table IV; in spite of many obvious "snags," and possibly some concealed ones, the figures are not without interest.

TABLE IV.—*Analysis of 210 Female Gc. + Cases treated with Sulphanilamide or Sulphapyridine*

SULPHANILAMIDE		
Total Gc.+ cases at start of chemotherapy	123	(26 defaulted before 3 months, leaving 97)
Failures and early relapses	18	
Late relapses (Gc.+)	16	(11 relapsed after 3 months)
SULPHAPYRIDINE		
Total Gc.+ cases at start	87	(5 defaulted before 3 months, leaving 82)
Failures and early relapses	5	
Late relapses (Gc.+)	7	(4 relapsed after 3 months)

On the face of it the sulphapyridine figures are more encouraging than the sulphanilamide ones and do not appear to confirm the male findings, but against this it must be remembered that the maximum follow-up period of the female sulphapyridine cases is so far only eight months as against two years in the sulphanilamide cases, so that it is reasonable to expect some further increase in the late relapse figures of the former. Furthermore, it will be appreciated that, as the smaller effective dose of sulphapyridine (2 grammes daily as against 3 grammes of sulphanilamide) was more easily tolerated by women patients, it is more likely that the doses prescribed were actually taken. Experience has taught us the paramount importance of avoiding toxic effects in the treatment of women out-patients.

Summary

This article deals with an important and hitherto neglected aspect of the new chemotherapy of gonorrhoea—namely, the occurrence of late relapses after apparently complete cure by sulphonamide compounds; it also gives the results of an investigation into the incidence, recognition, and causation of these relapses.

An analysis is given of 1,268 male and 210 female cases of gonorrhoea whose chemotherapy was completed from six months to two years previously. This analysis indicates that of cases which have been successfully treated with sulphonamide compounds and which have passed tests of cure about 20 per cent. relapse subsequently.

This figure of 20 per cent. is quite distinct from the incidence of chemotherapy failures and early relapses, and must therefore be added to the latter in any calculation which aims at showing the final results of sulphonamide treatment. In the present article no attempt is made to assess the full incidence of chemotherapy failures or the results obtained with individual compounds.

The analysis gives comparative figures of relapses after sulphanilamide, sulphapyridine, and uleron; it indicates also the effect on the relapse rate of delaying the chemotherapy and of combining it with adjuvant treatment, and provides answers to other pertinent questions.

Special attention is given to the clinical recognition of late post-chemotherapy relapses, and to their differentiation from reinfections and from early relapses. The course and treatment of late relapses are also indicated briefly.

Emphasis is laid on the influence this high relapse rate must exert on the reliability of tests of cure, on the length of a safe follow-up period, and on the responsibility inseparable from the final discharge of the patient.

The fact that half of these late relapses occurred more than three months after apparently complete cure throws doubt on the reliability of certain published statistics of results obtained with sulphapyridine and other sulphonamide compounds.

The first quarterly issue of the new series of reports by the British Association for the Advancement of Science has been received. It is dated October, 1939, and is obtainable at 5s. from the offices of the British Association at Burlington House, Piccadilly, W.1. It contains an introductory account of the history of the British Association, some of the proceedings of the meeting at Dundee, and abstracts of other communications. When that meeting was terminated by the outbreak of war after the first three days of scientific sessions, it was decided that all communications of which the delivery had thus been unavoidably cancelled should be taken as read, and be printed as such in the *Advancement of Science*, as this series of reports is termed. It is intended to supply an index to the four parts in each year, and to print it in the July issue. The papers appearing at length in the October, 1939, issue are the presidential address, "The Western Isles through the Mist of Ages"; the address by Professor W. E. Le Gros Clark, F.R.S., "The Scope and Limitations of Physical Anthropology"; as well as the first instalment of a scientific survey of Dundee and district, and the reports of the research committees of the British Association.

THE MEDICAL RESEARCH COUNCIL BLOOD TRANSFUSION OUTFIT

AS PROVIDED FOR THE SECTORS AND DEPOTS IN LONDON AND THE HOME COUNTIES

BY

JANET M. VAUGHAN, D.M., F.R.C.P.

Director, Emergency Blood Transfusion Depot, Slough, Bucks

Shortly before the outbreak of war the Medical Research Council, acting for the Ministry of Health, established four depots in the Home Counties to collect, store, and distribute blood for civilian air raid casualties in London and the surrounding districts.

These depots and the London sector hospitals were provided with special apparatus for the withdrawal and administration of blood. The apparatus as originally issued was extremely simple, partly owing to difficulty in obtaining certain more elaborate components at short notice. In the light of experience, and as supplies became available, additional equipment is now being issued from the depots. It has also become apparent that the needs of the different hospitals to be supplied are somewhat variable. No attempt has therefore been made to obtain complete uniformity in the apparatus issued. The following practical notes are based on the memorandum of instructions which was issued by the Medical Research Council some weeks ago, but they also include reference to certain modifications which have been adopted since this memorandum was first prepared.

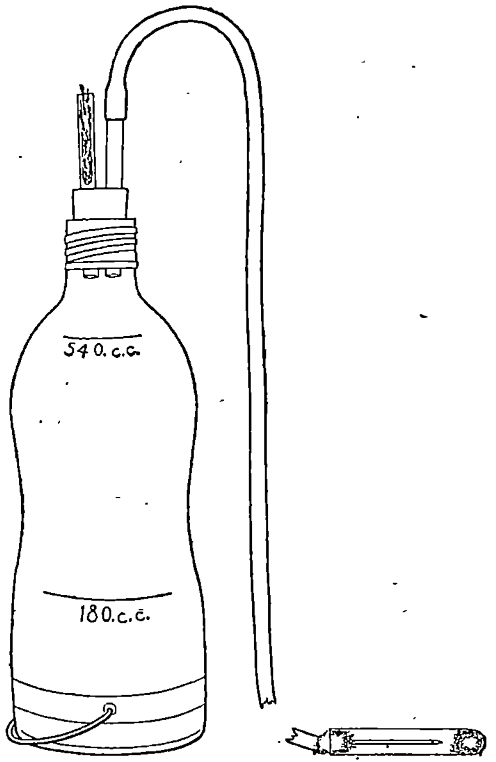


Fig. 1.

The bottle for the taking, storage, and giving of blood is a modified pint milk bottle, slightly waisted to facilitate holding, fitted with an aluminium screw cap lined with a 4 mm. rubber diaphragm, and provided with a metal band and loop at the base for hanging the bottle in the inverted position when it is required to administer blood by gravity. (In Fig. 1 the screw cap has been removed and replaced by a rubber bung.) The bottle is marked at 180 c.cm. and 540 c.cm. for measuring the anticoagulant solution and blood.

Anticoagulant.—The anticoagulant solution used at present is 1.05 per cent. sodium citrate in 0.85 per cent. sodium chloride. Both salts must be of a high grade of purity; the solution must be prepared with freshly distilled water, and should be filtered and autoclaved immediately. One volume of the solution is used for two volumes of blood (180 c.cm. citrate solution to 360 c.cm. blood).

Withdrawal of Blood

The bottle may be used in taking blood either by gravity or by the vacuum method.

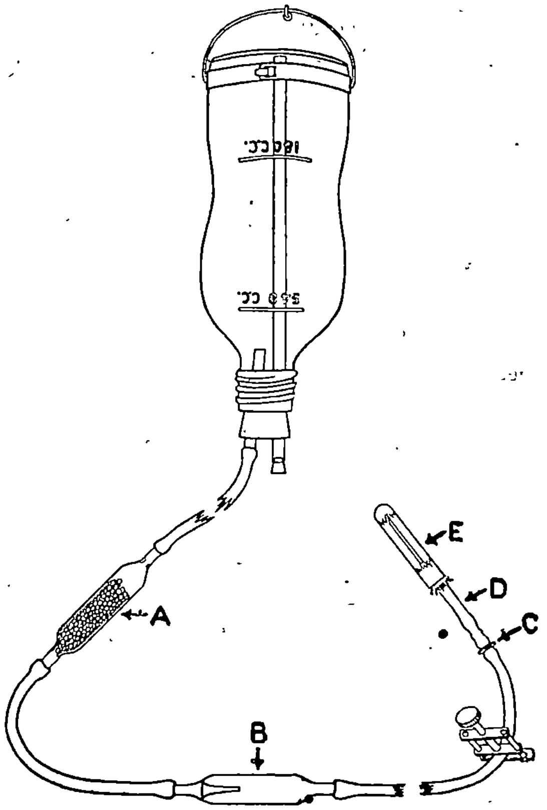


Fig. 2.

Gravity Method.—The screw cap is removed and kept sterile. The bottle is then fitted with a rubber bung pierced by two three-inch glass tubes, one of which is lightly plugged with cotton-wool and acts as an air vent. To the other is attached a length of rubber tubing and a stainless steel needle (Fig. 1), which is protected, after sterilization or during transport, by a small glass test tube. A sphygmomanometer cuff is applied to the upper arm of the donor, the skin over the vein cleaned and anaesthetized, and the needle inserted into the vein. The blood having been withdrawn and the rubber bung removed, the bottle is again sealed by the screw cap. If gravity proves insufficient to maintain a flow of blood, suction may be applied to the air-vent tube by means either of a Higginson's syringe or of a simple suction device. It is essential to mix the blood and anticoagulant by gentle rotation throughout the time of collection.

Vacuum Method.—If the aluminium cap of the bottle is perforated, the rubber diaphragm inside being left intact, the bottle may be used for the vacuum method described by Boland, Craig, and Jacobs (*Lancet*, 1939, **1**, 388). As pointed out by these authors (ibid., 1939, **2**, 905), the outfit provided differs in several important respects from that which they recommended for this technique. Nevertheless it has been found in practice to work satisfactorily when used in this way.

Administration of Blood

Several modifications of the administering equipment have been introduced as the result of experience during the past ten weeks. The glass-wool filter originally proposed is no longer recommended for general use, as it proved very difficult to ensure satisfactory packing of the glass-wool, and this filter was particularly difficult to clean. Three alternative sets of component parts are now available, the main variable being the type of filter used. Two types of drip feed, described subsequently, will shortly be issued from the depots; either can readily be added to the administering outfits.

1. *Closed Glass-bead Filter.*—This equipment (Fig. 2) consists of a rubber bung pierced by two glass tubes, one of which is long enough (9½ in.) to reach almost to the bottom of the bottle and is closed externally by a small cork. The other tube (2½ in.) has attached to its outer end, in sequence, a length of rubber tubing, an elongated glass bulb containing glass beads (Fig. 2. A), a further length of rubber tubing ending with a male metal adapter (C), a female adapter with a Record fitting attached to a short piece (1 to 1½ in.) of rubber tubing (D), and a narrow-bore stainless steel needle protected by a small test tube (E). A screw pressure clip will shortly be available; at present a spring clip is issued; Fig. 2 also shows a simple type of drip feed bulb (B), included between the filter and the rubber tubing attached to the male adapter. To administer the blood by gravity it is necessary to replace the screw cap on the bottle by the rubber bung, invert the bottle, and remove the small cork from the long glass tube, so that the latter acts as an air inlet. The two adapters should be separated, and the needle, attached to the short piece of rubber tubing and the female adapter, is passed into the vein. If the vein is entered blood appears through the end of the female adapter; this can then be joined to the male adapter, from which blood should also be flowing, the filter bulb and delivery tubing having been completely filled with blood by releasing the pressure clip. (If preferred, a Record syringe can be attached to the female adapter before the needle is inserted into the vein, and suction can thus be applied in order to judge whether the venepuncture is successful; alternatively, the needle can be inserted on a Record syringe and afterwards joined directly to the male adapter.) The filter bulb should be kept approximately vertical during the giving of blood, to ensure effective filtration by the beads.

2. *Loose Glass Beads Filter.*—The apparatus is similar to that just described, except that the bulb containing glass beads is omitted. The blood is instead filtered through 25 c.cm. of glass beads, which are separately sterilized in a wool-plugged boiling-tube and poured into the bottle of blood immediately before fitting the delivery bung (Fig. 3). The fish-tail inner end of the outlet tube in the bung prevents obstruction by the beads.

3. *Gas-mantle Filter.*—This third alternative type of filter, devised by Dr. M. Maizels, consists of an open cylindrical stocking of finely knitted cotton, as used in the manufacture of gas mantles. It is three and a half inches long, and is supplied by the makers threaded with a purse string at each end. The filter is supported inside the bottle by a quarter-inch piece of thick pressure tubing, which is pushed on to the long glass tube of the delivery set until it is about two and a half inches from the narrow end of the bung (Fig. 4, A). The stocking is slipped over the bung and the long tube, one end is fastened securely by tying its purse string beyond the pressure tubing, the other is fitted round the inner end of the bung (Fig. 4, B), where it should be fixed by fine copper wire (Fig. 4, D) or by ridging the neck of the bung so that the purse string can be tied tightly. In this way the stocking is pulled into a stretched closed cone over the inner end of the delivery tube.

DRIP FEEDS

As indicated above, two alternative types of drip feed bulb are being provided for the administering outfits. (1) The simpler type is illustrated in Fig. 2 (B). When this is used the screw clip should be placed *below* the drip bulb, near the needle, in order to obtain satisfactory control. (2) The other type is shown in Fig. 3. The screw clip in this case must be placed *above* the drip bulb, which has a glass side-piece with a short piece of rubber tubing attached, controlled by a spring clip. By suitable manipulation the operator can adjust the level of blood in the drip bulb.

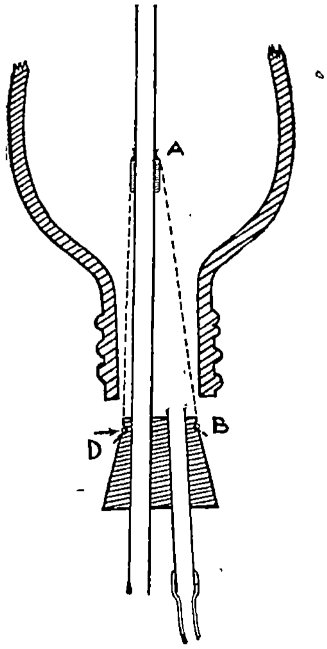


FIG. 4.

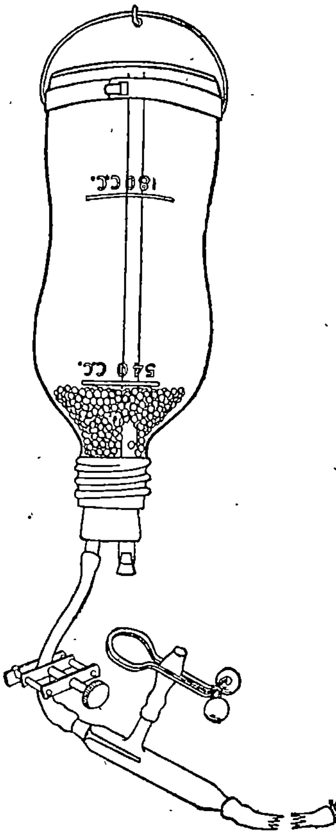


Fig. 3.

The equipment as supplied can also, of course, be readily adapted for use with a simple funnel or with any form of two-way tap or syringe.

Important technical points to be borne in mind in cleaning and preparing the apparatus have been emphasized by the medical officers in charge of the depots (this *Journal*, November 25, p. 1053), and they need not be reviewed here. It is clear from the results reported that the success of a large-scale transfusion service is dependent upon attention to such technical details, and that transfusion with the simple type of apparatus described can be very satisfactory.

THE BARREL BANDAGE FOR FRACTURES OF THE JAW

BY

W. KELSEY FRY, *M.C.*, M.R.C.S., L.D.S.

The treatment for fractures of the jaw is very little referred to in modern surgical textbooks and always appears to be in the " no man's land " of surgery. Simple fractures of the jaw are generally adequately treated by the dental surgeon, but those fractures resulting from gunshot wounds and from injuries caused through air raids will require the very closest co-operation between the plastic and dental surgeons. In order to ensure the successful treatment of these cases the Emergency Medical Service is providing special centres. The emergency treatment, however, will have to be provided at the first-aid posts and casualty clearing hospitals.

The immediate treatment of fractures of the mandible should be directed towards preventing asphyxiation, which is liable to occur through the loss of control of the tongue. The displacement of the tongue may be such that the air passages are obstructed, and in this condition the posture of the patient is important. The stretcher-bearers should be instructed to place the patient on the stretcher with his face downwards and his head hanging over the end of the stretcher. If the patient is able to walk he must be instructed to stoop well forward. The object should always be to keep the tongue well forward.

For the immediate relief of pain and to guard against the backward displacement of the mandibular fragments it is necessary to apply a bandage which will have the maximum pull in an upward and forward direction and must on no account have any tendency to pull backwards. For many years the textbooks have recommended the four-tail bandage, but it became evident in the last war that the backward pull of this type of bandage not only increased the displacement but was in many cases extremely dangerous. It has since been discarded by all surgeons familiar with this type of fracture. The bandage which was found most efficient and easy to apply was the " barrel " bandage. As will be seen from the diagram, this has an upward and slightly forward pull.

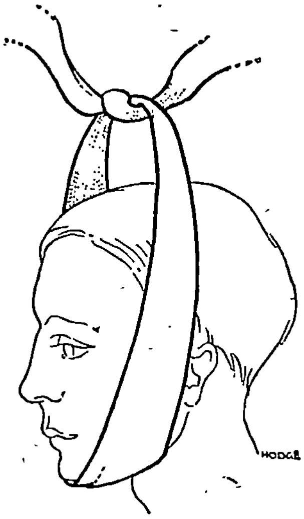


Fig. 1.

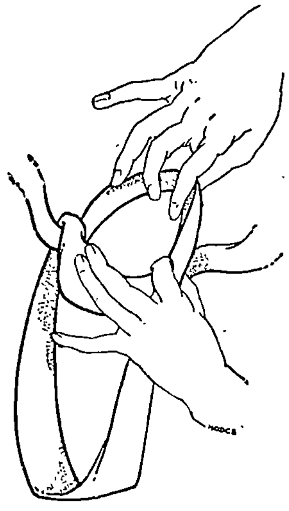


Fig. 2.

To apply this about 6 feet of 2 to 2½ inch bandage—preferably unbleached calico—is required. The middle of the bandage is placed under the jaw, well back just in front of the angle; then a simple knot is tied over the vertex of the skull (Fig. 1). Using both hands, open the knot so that the front loop comes in front of the forehead and the back portion under the occiput (Fig. 2). The two ends are then taken and upward tension is exerted, and by a slight adjustment the two running hitches are made to occupy a position slightly above and in front of the ear. The two ends are then tied in a reef knot on the top of the head (Figs. 3 and 4).

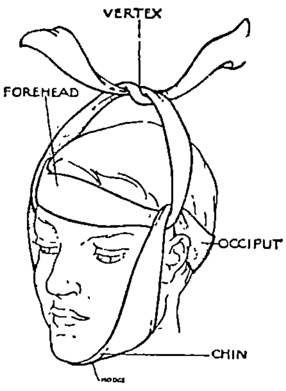


Fig. 3.

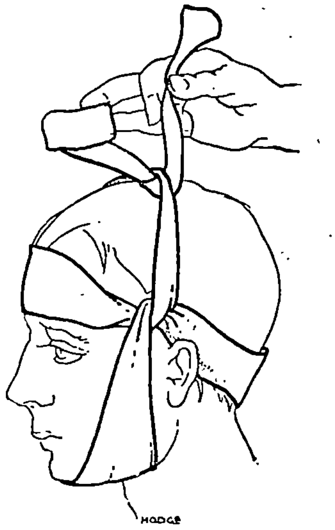


Fig. 4.

I am indebted to Sir Harold Gillies for the use of the illustrations.

A HAEMOLYTIC STREPTOCOCCAL EPIDEMIC IN A HOSTEL

BY

NESTA H. WELLS, M.B., Ch.B.

Honorary Physician, Duchess of York Hospital for Babies, Manchester ; Woman Police Surgeon, City of Manchester

What has been called the " unitarian " hypothesis with regard to streptococcal epidemiology has often been referred to during the last few years, a particularly interesting account by Bradley appearing in the *Journal* of October 8, 1938 (p. 733), a most opportune moment for me. He stressed the value of typing haemolytic streptococci and showed the varying types found over a number of years in the semi-isolated community of a boarding school. While reading this I was confronted with an epidemic in a somewhat similar community—namely, a university women's hall of residence, numbering with staff and students about 200. The following is an account of it which may be of value to others, for the more we know how to combat streptococcal infections the nearer we are to reducing one of the most crippling as well as most deadly groups of diseases.

Clinical Record

In the summer of 1938 one student, not my patient, was ill, had cervical adenitis and peeled, and was thought to have had an unrecognized scarlet fever. In early June I was asked to see another girl who had a rash like scarlet fever but no rise of temperature, and who later developed enlarged glands. In late June a definite case of scarlet fever occurred, and another in July among the kitchen-maids. On investigation then I found that three others of the domestic staff and two students had been treated by various doctors during the summer term.

The comparatively few students and maids still remaining in Hall were all examined by myself or the assistant M.O.H. for any gross signs of nasopharyngeal infection.

It was hoped that the four-weeks vacation would clear any infection, but within two weeks of returning in September a maid went down with a septic tonsillitis but no rash. The students came back in the early days of October, and on the 8th a series of students and maids started with tonsillitis—one on the 8th, one on the 9th, two on the 10th, seven on the 11th, three on the 12th, one each on the 14th, 15th, and 17th—and four students went home on various dates to be ill there, making a total of twenty-one.

On the 12th it was realized that something drastic must be done to prevent the outbreak spreading, so all persons in Hall were given masks of gauze, which were to be worn for two weeks at all times except when eating, and they were told to avoid close contact with others so far as possible. Gargles were provided for daily use. These steps appeared to stop the epidemic from progressing, and no further cases developed except those which we could explain (see later).

Bacteriological Findings

Having read the above-mentioned paper, I appealed to the Public Health Laboratory to test for haemolytic streptococci Group A, which they agreed to do, though they could not undertake typing. The carry-over from the summer appeared to be somewhere among the domestic staff, so all these were swabbed. Four of them and the assistant in the sanatorium (who was nursing the sick) were found to be positive carriers of Group A, one remaining so for a month. All the sick were swabbed from ten to fourteen days after beginning, and with one exception were still positive. All positives, whether carrier or convalescent, were reswabbed at intervals of ten to fourteen days, and had the throat sprayed or painted twice daily, and were given frequent gargles, until the result was negative. During the acute stage they all had prontosil album, an average of 10.6 tablets (5.3 grammes) each, but mainly between eight and twelve. The highest recorded temperatures of half the cases were 100° to 102° F., with one-quarter higher and one-quarter lower. While the temperature was up, three or four tablets per twenty-four hours were given, and in eight cases this was sufficient to bring it to normal in twenty-four hours; in ten, normal was reached within forty-eight hours, and all were down by four days. Prontosil album was given at first for a day or two after the fall in temperature; but as time passed one or two tablets were administered daily until the throat was clear, a total of fourteen to seventeen being taken by some. The average stay in the sick-room was 6.6 days, and it mainly lay between five and nine days. The patients were then sent home or away for a few days, another swab being taken on their return.

Two patients developed cervical adenitis two to three weeks after the tonsillitis, and two had rheumatism (one so badly that she has been unable to return to college), but most recovered fairly well and had positive swabs long after they were fit. Most took five to six weeks to clear (the usual scarlet fever isolation period), but three were still positive eight weeks after the attack. Two of these had large unhealthy tonsils (which were removed in the vacation) and the other had suffered from nasopharyngeal catarrh for many years, though her tonsils had been removed previously. This case responded to nothing until a paint of glycerin and prontosil was used, a negative swab being obtained within two weeks.

Discussion

The effectiveness of the mask in preventing further trouble was shown early, especially when this precaution was omitted by those with positive swabs. One convalescent did not wear it during the rehearsal of a play, and within three days two members of the cast went down. Another girl thought it foolishness, and did not wear it in her room when others entered, with the result that her friend caught the infection. Two mild cases started in December the source of which was uncertain, but one of these patients had been sitting working in front of an unmasked carrier. By December 22 all cases were negative, except the tonsillectomies, and these patients were all right on their return in January. No further cases developed.

The cause of the sudden outbreak was obscure until it was discovered that during those early days after the September crisis there had been a great trying-on of gas masks, and one of the fitters-on, who was connected with the kitchens, had had some streptococcal infection in the summer vacation. Though this was not known till much later there seems little doubt that she or a maid who remained positive for a month acted as the link between the summer and autumn outbreaks. The summer rashes tended to be Group A of the scarlet fever type, but there were no rashes in the autumn. Both outbreaks were followed in a few cases by a cervical adenitis two to three weeks later. The second outbreak gave rise in five to six weeks to two cases of acute rheumatism, one very severe.

Summary

The history of a haemolytic streptococcal Group A throat infection is given, showing the varying symptoms found.

Droplet contact through the breath is clearly demonstrated.

Group A positive swabs lasted usually five to six weeks, sometimes longer.

The mask is effective in preventing spread, thus reducing time of isolation and period off studies.

The value is shown of throat swab examination for the haemolytic streptococcus as well as diphtheria when dealing with people in a community.

The danger from carriers of Group A is stressed. This is recognized in puerperal cases, but not so well in the case of haemolytic throats in the general community. Persons with positive swabs should be isolated or at least masked until negative.

The severity of the disease declined as time passed.

Prontosil album (or similar drug) taken by mouth or applied locally is of value in dealing with these organisms.

My thanks are due to the staff of the Public Health Laboratory, who reported on the swabs, and also to the nurse at the Hall, whose care prevented further trouble.

Arteriographic Diagnosis of Tumours.—Characteristic displacements of the cerebral vessels and carotid siphon make it possible to determine the situation and extent of frontal lobe tumours. Thus, polar astrocytomas suitable for radical operation may be distinguished from the fronto-medial tumours which are usually glioblastomas of bad prognosis. Laterally situated astrocytomas may also be distinguished.—Arteriographic Diagnosis of Tumours of Frontal Lobe and Basal Ganglia. E. Fischer.—*Zbl. Neurochir.*, April, 1939, **2**, 72.

Clinical Memoranda

A Case of Sturge's Disease

The great rarity of the syndrome known as Sturge's disease, or naevoid amentia, justifies the recording of the following case, which came under my observation recently.

Case Report

The patient, a male aged 18, stated that he had been in good physical health until the age of 16; before that, however, a certain mental ineptitude had been apparent: he always fared badly in school examinations, and his mother stated that he was "rather difficult to get on with." At the age of 16 he began to suffer from fits, and up to the time of examination had had five. In a fit he is suddenly rendered immobile, and he sits and stares straight ahead, being unable to speak or move. This state lasts five minutes or so, after which he notices weakness in the right arm and leg. The fit is usually followed by copious vomiting. The weakness in the right side takes about two weeks to disappear; he then remains perfectly well until the next attack. The last fit was followed by slight weakness in the left leg as well. There had been no headache. He also stated that the vision in his left eye had always been poor, and now he can only read large headlines with that eye.

His father died at the age of 47, the cause being unknown to the patient. His mother was alive and well, as was also a younger brother. The only sister died at the age of 3 months, the cause again being unknown. There was no history of outstanding birthmarks or of epilepsy in the family.

The patient was a well-developed, pleasant-mannered youth, who answered all questions intelligently. The naevus was of the port-wine capillary variety, and of extraordinary extent. It covered the whole of the left side of the face and scalp, including the pinna, and transgressed the mid-line in front. It extended down the left side of the neck, and covered the left pectoral region in front and the left scapular region behind, and the whole surface of the left upper limb to the finger-tips. There was a small isolated patch near the angle of the right scapula. An interesting feature was its encroachment on the buccal mucosa (mainly on the left side) and on the conjunctiva of the left eye. In addition to the naevus there were numerous small varicosities of the superficial veins over the whole surface of the left upper limb, especially pronounced about the wrist and hand. There were also one or two large varicose trunks as thick as the little finger along the posterior axillary fold. This suggested an arteriovenous communication, and, in accordance with this, the left upper limb was found to be considerably hypertrophied, even allowing for the slight degree of atrophy of its fellow.

When seen by me the patient was in the recovery period from the fifth seizure. Signs of a right hemiplegia were present: there was slight atrophy of the muscles of the right arm and leg, and a definite but slight loss of power. The tendon-jerks on both sides were exaggerated, and ankle and patellar clonus could be elicited on the right side. Both plantar reflexes were flexor, and the superficial abdominal reflexes were brisk on both sides. Sensation was unaffected. There were no cerebellar signs.

Examination of the left eye showed a slight degree of heterochromia. It was not unduly prominent, and its tension and movements were normal. The optic disk was cupped. Vision in the eye was poor, only the largest print being readable. The pupils were equal in size and reacted to light. The visual fields were not estimated. The heart and lungs were normal. The blood pressure was 170/135. The skull and spine appeared normal. Examination of the cerebrospinal fluid gave findings within normal limits, and the Wassermann reaction of the blood and cerebrospinal fluid was negative. A skiagram of the skull showed a large mass of calcification in the occipital cortex, with delineation of adjacent sulci and gyri. There was no cranial asymmetry.

The interesting points in this case were the extent of the naevus, its involvement of mucous membranes, and the probability of associated arteriovenous communication.

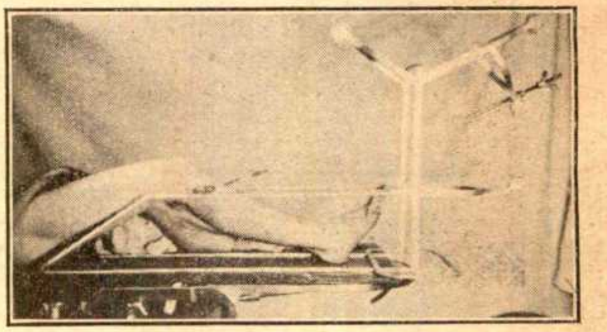
London, W.1 Arthur L. Newson, M.B., F.R.C.S.

Reduction of Fracture of Shaft of Femur

The following method, used to procure axial traction of a fractured femur sufficient to permit of easy reduction and maintain it while a plate was being applied, is described in the hope that it may be found of use in circumstances where assistance is scarce and an orthopaedic table is not available.

Case History

The case was one of transverse fracture at the junction of the middle and lower thirds of the femoral shaft, with overlap of 1½ inches and posterior displacement of the distal fragment, which had been previously manipulated into correct position and alignment with the aid of a Victor portable *x*-ray unit and operating fluoroscope, but which, owing to the interposed muscle (as was discovered at operation), could not be kept reduced, so necessitating open reduction and plating. Previous to operation traction had been applied by means of a Kirschner wire and stirrup, the wire passing through the tubercle of the tibia. This was left *in situ*, and when the patient was on the operating table a modified Braun's frame was slipped into position under the fractured thigh. The screw portion of a Böhler frame for reduction of fractures of the tibia, which had been detached therefrom, was tied on to the Braun's frame. The hook of the screw was linked tightly to the Kirschner stirrup (see illustration). The fracture was exposed by Henry's method (*Exposure of Long Bones and Other Surgical Methods*, 1927), and while an attendant tightened the screw to produce the required tension, the fragments, after removing interposed muscle, were easily manipulated into the correct position. No attention was needed to maintain the correct extension while the plate was being applied. There was no difficulty in fitting the Braun's frame, carrying the injured limb, and the sound limb on the operating table. The method is applicable to fractures of any part of the femoral shaft, and further abduction can easily be secured by placing a wide board (half bed-board) across the distal portion of the table on which the frame can rest and be moved into a position of abduction.



The apparatus illustrated is, I believe, in use in most hospitals and institutions, and easily within the means of cottage hospitals which cannot afford an orthopaedic table. In some cases the question of anchoring patient or Braun's frame, or both, to the table might need consideration, and permits of easy solution.

The portable *x*-ray unit and operating fluoroscope were kindly loaned for test by the Victor *X*-Ray Corporation Ltd.

G. J. Hanly, M.B., F.R.C.S.Ed.
Wing Commander, R.A.F.M.S.

Reviews

LIFE AS INTELLECTUAL ADVENTURE

Life and Living. By Frederic Wood Jones, D.Sc., F.R.C.S., F.R.S. (Pp. 268. 10s. 6d. net.) London: Kegan Paul, Trench, Trubner and Co. 1939.

It has become a cliché with reviewers of thrillers to assert that they were unable to put the book down until it was finished. Yet this was literally the case with Professor Wood Jones's *Life and Living*, so completely were we fascinated by it. Lord Crawford is reported to have said that he never disbelieved scientists except when they talked philosophy. To this our biologist can retort that he not only appreciates the limitations of his own brain imposed upon it by its ancestry, but also recognizes that these limitations equally apply to the brain of the philosopher even though he himself may not know it! Here we have not the biologist posing as a philosopher but the anatomist turned physiologist. He does not like the obviously inappropriate label *Homo sapiens* for the human race, preferring that of *Homo faber*, for the making of tools was probably man's earliest intellectual manifestation, and tools were the first extension of his personality. To this is due his persistent tendency to mechanistic modes of thought; the physical sciences were far advanced when biology still lacked even a knowledge of the circulation of the blood. By a trick of fate even Harvey's discovery was given a mechanistic interpretation by Descartes, to whom an engineer's universe was a natural conception. For, as Needham says, it is the configuration of our minds that makes us conceive of matter and energy in mechanistic fashion. This concept took possession of medicine; for Morgagni disease was situated in an organ, for Bichat in a tissue, and ultimately for Virchow in the cell; but the individual was lost sight of. The same concept dominated anatomy; the prolonged search for archetypes beloved of Owen crashed and fell with the acceptance of Darwin's explanation of evolution. There was no archetype—it had been a myth and a delusion. Instead of fixity there was change; instead of design, the natural choice of variations. But this teaching had far-reaching implications; if we are just bundles of accumulated structures it might well happen that the whole of our heritage would not be suitable to our present needs. So the search began for unadapted and obsolete structures—and they were found. For Metchnikoff and those who followed him all Nature was an ironic jumble of misfits; a world of creatures
predestined to failure by reason of their inherited di
harmonies; a cruel, unpurposeful struggle against
in the form of useless and harmful relics accum
from our ancestry. But what the pessimists fa
take into account was the astonishing way in
Nature has been at work setting to rights the
monies that have arisen through changing circum
the beauty of readaptations has never had its c

Without going into details we may say that
Wood Jones describes the method of readapta
the label of cytoclesis, the call of cell to cel
to tube; just as men tunnelling from t
mountain tap their call to each other till
does each kidney tubule call to each urete
they join end to end. The optic cup
lying skin to become transparent wh

the cup; with no optic cup in its normal position no translucent cornea is formed. Eyes have been made wherever they are wanted. Similar types of organs have been made over and over again; the only common bond between them all is the function they discharge. So back we come from the rigid tenets of animal morphology and the misleading anatomy based on the formalin-hardened cadaver; back to John Hunter's aphorism "Structure is only the ultimate expression of function," re-echoed by Hora 150 years later as "Evolution is the adaptation of organisms to environment." The optimist can breathe again! The author is no blind optimist, however; he sees how the call of cell to cell may secure the nourishment of the embryo by the invasion of trophoblast into maternal uterine tissue, and yet by perversion of that invasion a deadly form of malignant growth may arise. He sees in sterol metabolism the outstanding problem in the chemical study of life, but notes that these potent and complex substances which produce organization, growth, sexual characters, and all the perfections of the normal body may by a perverse metabolism and when their period of utility is outlived become the agents of death.

If biology has retraced its steps, so has physics. Before modern physics the biologist stands agape, bewildered by it all. He gave up his mysticism out of pure deference to the more exact findings of the physicist, he schooled himself to spell no words with capital letters save perhaps Mechanism, Variation, and Natural Selection. And now the physicist has deserted him, and is moreover doing those very things he taught him to despise. In truth the biologist is very like the little boy who, taught by a slightly older brother to despise girls, subsequently catches him making ardent but immature love to the girl next door!

This we take to be the author's creed running through his pages. It is a creed which enables him to see life as a voyage of intellectual discovery. Physical adventures, brave deeds, and romantic doings are for the young and strong; intellectual adventure waits upon everyone who has the enterprise to embark upon its quest. And yet how few ever undertake it. He rightly maintains that this should be the great aim of a university. In the ideal university the professor should be the leader of an expedition into the most exciting and romantic of all regions —the region of the intellectually unknown. His students should be his eager followers prepared to share
hardships, the excitements
tures. Some such l
Gaskell, and Cush
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which wo

DIVERTICULA AND DIVERTICULITIS

Diverticula and Diverticulitis of the Intestine. Their Pathology, Diagnosis, and Treatment. By Harold C. Edwards, M.S., F.R.C.S. With a foreword by Gordon Gordon-Taylor, M.S., F.R.C.S. (Pp. xii + 335; illustrated. 25s. net.) Bristol: John Wright and Sons; London: Simpkin Marshall. 1939.

This work is based upon the essay to which the Jacksonian Prize of the Royal College of Surgeons of England for 1932 was awarded. Mr. Edwards tells us that although the literature on the subject of diverticula, and particularly those arising from the large intestine, is relatively enormous, it is in reality a mushroom growth starting from a few scattered post-mortem observations in the eighteenth century. Meckel in 1822 not only established the aetiology of the diverticulum which bears his name, but recognized that other varieties which he called false diverticula might arise apart altogether from the vitelline duct. This work is divided into four sections, each of several chapters: (1) congenital diverticula, (2) diverticula of the duodenum, (4) diverticula of the jejunum, and (4) diverticula of the large intestine, and a particularly attractive feature is the historical note which introduces each of these sections. Thus we are told of the first case of duodenal diverticula published in 1710 and referred to by Morgagni, and of the first description of jejunal diverticula by Astley Cooper in 1844. The author tells us that the ileum is relatively immune from diverticula and is affected only in severe cases in which diverticulosis has started in the jejunum and spread steadily down the bowel until the ileum is reached and is similarly affected. In the large intestine diverticula of congenital origin are so very rare that section 4, dealing with those occurring in this part of the bowel, is devoted entirely to the condition of multiple diverticula of the colon in which the pouchings are herniations of the mucous membrane through gaps in the muscularis. When uncomplicated the term used for this condition is diverticulosis; when inflammatory changes are present, diverticulitis. The view very generally held that colonic diverticula are commoner in men than in women is not shared by Mr. Edwards, who finds no great difference in the sexual incidence, but that men are far more frequently affected by the complications of the disease than are women.

ere is a short foreword by Mr. Gordon-Taylor, who
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The work is well
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analysis of available information concerning the technique of transfusion must inevitably therefore, to use a trite expression, fulfil a long-felt want. Two-thirds of the book is an account of his own personal experience, both technical and clinical, of blood transfusion; the remainder attempts to extract the more important material from the extensive literature. All subjects not directly related to blood transfusion have been omitted—for example, the medico-legal and anthropological aspects of blood groups. There is for reasons of space no historical section, which is perhaps unfortunate. In matters of technique, where several alternative methods or patterns of apparatus exist Mr. Riddell has deliberately been dogmatic and has described in detail the procedure he himself prefers. An essential chapter on the methods of obtaining typing sera and its correct titration is included. The recent large-scale enrolment of blood donors, to be used in a national emergency, has shown how little the importance of such high-titre sera is appreciated, and yet it is the keystone of a successful service.

Intravascular haemolysis, on which so much fundamental work has been done in this country during the last few years, is clearly reviewed for the first time in an English textbook. Mr. Riddell draws particular attention to the grave danger of circulatory failure in the transfusion of anaemias of long standing and to the principles governing the rate of introduction and dosage of blood, since he considers altered conceptions in regard to these matters form the two most important advances in blood transfusion in recent years. Possibly the use of stored blood might, by some people, be thought to be of at least equal if not greater theoretical and practical importance. The text is copiously illustrated throughout with diagrams and photographs; even the warming of a tile under the hot-water tap is not left to the imagination. A full bibliography is attached to each chapter, which is closed by a summary of the conclusions reached. Though there may be disagreements with Mr. Riddell on certain points there is no doubt that he has provided us with an important reference book on an important subject.

GALL-BLADDER DYSFUNCTION

Réactions Vésiculaires et Cholécystites. By Étienne Chabrol. (Pp. 184. 40 fr.) Paris: J.-B. Baillière et Fils. 1939.

Disappointed by the number of his patients in whom the operation of cholecystectomy has failed to relieve the pains they suffer from in consequence of disturbed function of the gall-bladder, Professor E. Chabrol has collected his experiences and noted them for the benefit of others, producing a book, the first of a series of monographs on clinical questions of the moment published by Baillière.
uthor finds among patients diagnosed as cases of acute
ystitis, hepatic colic, biliary dyspepsia, and biliary
gradation of reaction, falling into four varieties or
A patient may present little more than a migraine
orary dyspepsia, yet examination shows a rise in
lirubin; in the second degree pain is felt in the
region or over the site of the liver, with gastric
tinal upset; in the third stage there is frank
c, followed after many recurrences by a state of
hich symptoms of angina or acute oedema of
syncope may occur. In all these there is
th in the biliary system and in the neuro-
uilibrium of the patient. Such patients secrete
d, more, they discharge it poorly.
painful reaction of the gall-bladder is
iliary passages, which may originate

from inflammation locally, from deposition of calculi, from stasis without stones, from secretory disturbances, and possibly from abnormal nervous reactions. Of the inflammatory causes the author stresses the previous infection of typhoid fever; other bacteria, especially the colon bacillus, may be the source. In the formation of gall-stones metabolic disorder, infection, and stasis may all play their part. In a more difficult group are the cases of simple chronic cholecystitis without gall-stone, a dysfunction of the biliary passages. In all there is the association of right-sided diaphragmatic pain, intermittent reaction often febrile, and some degree of cholaemia. Aids in diagnosis are afforded by laboratory investigations of the blood and (with less success) of the contents of the duodenum recovered by tubage, and by radiological examination of the gall-bladder by special tests and of the surrounding organs, especially the duodenum and appendix.

Treatment medically should not be the immediate hypodermic injection of morphine; local applications of warm compresses and rectal administration of laudanum are preferable; diathermy is recommended. Between attacks a simple diet, especially avoiding fats, eggs, fried foods, and cooked butter; tubage of duodenum with stimulation of biliary drainage on Meltzer-Lyon principles; attempts at disinfection with salicylate of soda and alkalis; and treatment at one of the spas serving alkaline waters are indicated. Surgical intervention is essential for perforation or suppuration of the gall-bladder, and where the gall-bladder fills with fluid secretion so that tumour is felt with rise of temperature. When possible, operation is deferred till the immediate reaction is past, especially in jaundiced patients, but must be carried out for recurrent attacks and for acute attacks that have been controlled by medical measures. The indications are given for operating in other intermediate cases.

The book is well documented, mostly with quotations from French authors, and gives a useful discussion of problems which often present great difficulties in practice.

CARDIOVASCULAR DISORDERS

Cardiovascular Diseases: Their Diagnosis and Treatment. By David Scherf, M.D., and Linn J. Boyd, M.D., F.A.C.P. (Pp. 458; 10 figures. 21s. net.) London: William Heinemann. 1939.

This sets out to be a practical book, avoiding descriptions of complicated methods and apparatus. Emphasis is placed on common disorders and difficulties as suggested by experience with students, and which are often neglected in textbooks—for example, pulmonary embolism. The work is personal; no bibliography is included and citation of authors is reduced to the minimum. Cardiography is almost completely omitted, as it is believed that abbreviated accounts of this only confuse. First paroxysmal cardiac dyspnoea is described, and it is true that this is an important and common disorder of general practice which has been inadequately dealt with in textbooks; but the rather extensive theoretical discussion on the abnormal physiology underlying it is, perhaps, out of tune with the practical aim of the book. Valve lesions are discussed at length, occupying one-sixth of the book—an indication of how attention is returning to this aspect of heart disease. In the following section, dealing with diseases of the myocardium, it is suggested that acute myocarditis is a common condition occurring, apart from acute rheumatic carditis, in infectious diseases and as a result of septic foci, such as, for example, colitis and dental granuloma. The myocardial lesions of these latter conditions are, however, not likely to produce any permanent cardiac disability, and must be treated very differently from the myocarditis of acute rheumatism. There is no need to treat every patient recovering from an acute infection who shows tachycardia or unstable pulse as if he had an active carditis. Cardiac pain and its various causes are clearly described, but perhaps in hardly enough detail considering its frequency and importance. The final section on treatment is full and generally sound, though the statement that the "minimum period which must elapse between the last dose of digitalis and the first dose of strophanthin should amount to three days" considerably underestimates the safe period.

It cannot be said that the style of the text is good, nor has it always the clearness necessary for the type of reader for which the book is designed. As an example of an ambiguous sentence this may be quoted: "If digitalis therapy in a decompensated valvular lesion or myocardial disease is carried to the attainment of an optimal state for the patient concerned, it should not be discontinued until the manifestations of decompensation reappear." However, on the whole a well-balanced account of modern cardiology is presented; in the next edition perhaps the defects will have disappeared.

Notes on Books

The ninth edition of *Thomson and Miles's Manual of Surgery* (in two volumes, 21s. each, Oxford University Press) had not gone far in its preparation, we learn from the preface by Mr. ALEXANDER MILES, when this representative presentation of the teaching of the Edinburgh School of Surgery lost by untimely death the guidance of Sir David Wilkie, one of the greatest teachers of surgery—some say the greatest—of this generation. But with Mr. Miles he had already planned the lines on which this revision should proceed, and had arranged for the co-operation of over a score of his colleagues in the Edinburgh school in that work. The format has been altered decidedly for the better by using a larger page and certain typographical alterations. The first volume deals with general surgery and includes the sections on the surgery of the extremities; the second volume is arranged on a regional basis. There is evidence of thorough revision and rewriting throughout both volumes, and especially in the section devoted to neurological surgery. It is stated that many old illustrations have been discarded, but many still remaining have an old-fashioned air, and the radiographs are hardly up to the standard of most modern textbooks. It might be well for the next edition to contemplate a more drastic and complete revision of the illustrations to make them more worthy of the world-wide fame of this standard textbook of surgery.

First Aid for Everybody, by A. J. B. GOLDSMITH, M.B., B.S., F.R.C.S. (Faber and Faber, Ltd., London, 1939, 2s. 6d.), was first published in 1935, and has now been reissued with a supplement of sixteen pages entitled First Aid in Air Raids. We note that the tannic acid treatment of burns is not mentioned, and that in the section on the treatment of wounds it is stated that "tincture of iodine should be painted on the wound."

Endoscopy by introducing an illuminated speculum into the knee-joint has been suggested as a means of diagnosis, and a small brochure on arthroscopy (*Die Arthroskopie*, Leipzig: Steinkopff) has been prepared by Dr. E. VAUBEL. The author gives instruction in methods, indicating the precautions to be observed, and describes the use of the technique in some selected cases. The findings are illustrated in a series of coloured drawings. Some value may be obtained for scientific medicine by the correlation of the endoscopic appearances with the x-ray findings, but the method is unlikely to be taken into common use.

Preparations and Appliances

A SIMPLE GAS FLOWMETER FOR CLINICAL USE

Dr. JOHN DEVINE, senior resident medical officer, Royal Melbourne Hospital, writes:

There is a definite want of a simple and cheap instrument for measuring the flow of gases for therapeutic purposes. It is still the custom in many hospitals to administer oxygen and carbogen without any measure of the rate of flow. Thus patients are at the mercy of the nurse in regard to her judgment of an adequate flow. Frequently, too, they receive an unnecessary amount of an expensive gas. In most cases measurements are not made because the gauges used, while being very accurate, are expensive and soon wear out with continued use. The apparatus described below was evolved because it was cheap and could therefore be employed for routine use in hospital wards, and because it was so simple to use that any possibility of mistake was eliminated. It can also be used in the construction of a simple and cheap form of gas anaesthetic apparatus.

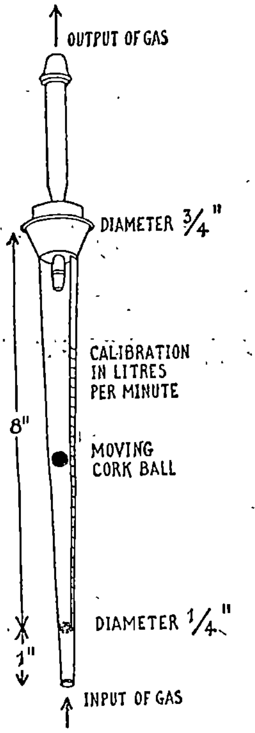


FIG. 1.

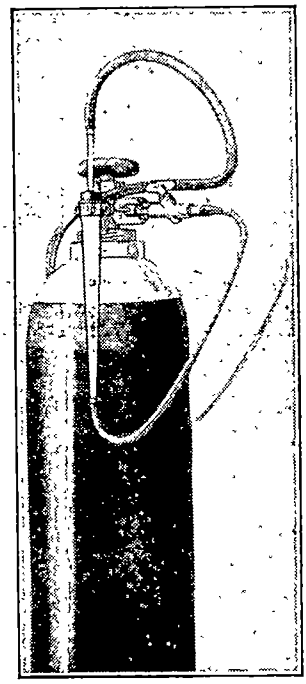


FIG 2.

FIG. 1.—Diagram to show construction of flowmeter.
FIG. 2.—Drawing from a photograph of the flowmeter attached to a cylinder of carbogen by a simple clip.

Principle.—In a tapering tube through which gas is passed the velocity of flow in any part of the tube will depend on the area of cross-section, since the same amount of gas passes through the whole tube. If gas flows in from the narrowest part of the tube in an upward direction, and a small rounded ball of light material such as cork is dropped into the tube, the ball will rise in the tube to such a height that the force of gravity acting downwards on it is equal to the force of the gas acting upwards. Since the tube tapers, the velocity of the gas passing through progressively decreases from the bottom upwards, and the ball finds a position where equilibrium is reached. If the flow of gas entering the tube is altered, the ball will take up a new position of equilibrium. The tube can then be calibrated against a standard flowmeter.

The Flowmeter.—This, as shown in the illustrations, is a glass tube one-quarter of an inch in diameter at the bottom, three-quarters of an inch in diameter at the top, and eight inches long. The ball used is of cork and is one-quarter of an inch in diameter. The meter is calibrated by means of a standard flowmeter to show with very reasonable accuracy flows from one to sixteen litres of gas per minute.

The apparatus has been used in some of the wards of the Royal Melbourne Hospital for the post-operative administration of carbogen and the intranasal administration of oxygen to patients with pneumonia. In testing the flow of oxygen considered by the nursing staff to be adequate for the intranasal administration to patients with pneumonia it was found that in nearly all cases they were giving under one litre per minute of flow, whereas a minimum of four litres per minute is usually considered necessary in such cases.

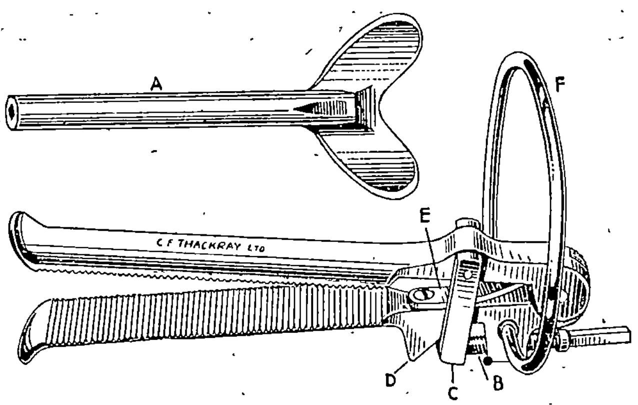
⁂ Carbogen is the term used in America for ready-made mixtures of CO_2 and O_2. In Great Britain the equivalent term is dicarbox.

AN IMPROVEMENT OF THE NON-PROJECTING ENTEROTOME

Mr. MICHAEL C. OLDFIELD, M.Ch., F.R.C.S., honorary assistant surgeon to the General Infirmary at Leeds, writes:

In November, 1937, I described a non-projecting enterotome for crushing a colonic spur. The instrument is used before closing a faecal fistula such as occurs after a Paul-Mikulicz operation or a colostomy. It was devised to obviate the leverage action of the handle which in the older instrument caused great discomfort to the patient. The severity of this discomfort depended directly upon the length of the projecting handle. Whenever the patient moved in bed the handle used to be pressed upon or jarred.

In the non-projecting enterotome the handle has been replaced by a key, which is removed after approximating the blades to the required degree. Each day the key is reapplied to tighten the grip on the spur, and the key is again taken away. The mechanism is simple and strong. By turning the key A the screw B is driven downwards on to the steel collar lever C hinged upon the opposite blade. This collar acts upon the sloping steel shoulder D. As the key is turned the screw and collar are depressed and the blades are gradually approximated. A small flat spring E is inserted between the blades and holds them apart during the application of the instrument to the spur. Maximum separation of the blades has been increased from three-quarters of an inch in the original instrument to one and one-sixteenth inches in the improved model. This has made introduction easier. The face of each blade is transversely serrated and the ends are everted. The width of the serrated jaws has been increased from two and a quarter inches in the original instrument to two and a half inches in the new one. It is found that a better grip of the spur is obtained with the wider blade. A steel ring (F) two inches in diameter has been inserted through a hole in the shaft near the screw B. The ring moves freely and causes no discomfort when the patient moves. It obviates the danger of the instrument slipping inwards into the bowel—an improvement which we have incorporated following the kindly and constructive criticism of Mr. David Lurie of Johannesburg.



I am indebted to Mr. L. R. Braithwaite and Mr. George Blomfield for their advice. The instrument is made by Messrs. Chas. F. Thackray, Ltd., Park Street, Leeds, 1.

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ANTIVIVISECTIONIST PROPOSALS IN SWITZERLAND

Experiments on living animals have been an essential condition for the development of physiology, pathology, bacteriology, immunology, pharmacology, biochemistry, and dietetics as experimental sciences, and have played a necessary part in the control of the strength and dosage of the remedies required by the emergence of a scientific therapy. Hitherto this country has stood almost alone in its control by law of such experiments, made for the promotion of knowledge in these departments of science, on which the practice of medicine is founded and built. British research workers in the medical sciences have become accustomed to this control during the period of more than sixty years since it was first established. An Act so old naturally presents historical anomalies, such as that which makes it necessary that every one of the multitude of experiments in which animals are now injected, dosed, or fed—every guinea-pig, rat, mouse, fish, or frog, every tadpole in a basinful, treated with a serum, a drug, a hormone, or a vitamin, to observe or measure its effect—should be returned as an experiment under Certificate A, and accordingly, in spite of repeated official explanations, sedulously misrepresented as a painful "vivisection" without anaesthetics—a kind of experiment for which permission has never, in fact, been given or even sought. The Act, however, has been administered strictly, punctiliously, and with understanding; and though in earlier years, when medical men in general were less accustomed than now to official records, reports, and inspections, there may have been research workers who found these irksome, there cannot be many who now regard the control as a hindrance to legitimate research. They have had reason, on the other hand, to recognize the fulfilment of one of the original objects of the Act—namely, the protection of men engaged in important and essentially humane researches from prosecutions instigated by determined ignorance.

It may seem surprising that other countries, including British Dominions, having standards not obviously different from our own in their care for the interests of animals, have so far not followed our example. They might well have been deterred, however, by observation of our own experience, showing that legal control and official inspection, while they may relieve genuine misapprehension and anxiety, by no means cause any abatement of a reckless and unprincipled agitation. They may even stimulate it by encouraging clamour for further and paralysing restriction, and by supplying official data for distortion. The existence of a strict control is accepted, not as a reassurance, but as evidence of a public sentiment accessible to further appeals.

The position which now threatens research in the medical sciences in Switzerland appears to be in many ways the same as that with which we have long been familiar in Britain. The *Schweizerische Medizinische Wochenschrift*, the well-known medical weekly published in Basle, has issued a special number[1] in which the situation is explained, the necessity for experiments on animals for progress in the medical sciences fully discussed and illustrated, and the nature of the opposition to them examined, in a series of articles by leading Swiss representatives of physiology, pathology, clinical medicine, pharmacology, medical psychology, and veterinary medicine, with some by French and German authorities in certain of these fields. From the article by Professor Hess of Zürich we learn that the Swiss Society for Medicine and Biology, doubtless desiring to allay genuine misunderstanding and disquiet, initiated some years ago the formation of a joint committee of its own members with accredited representatives of the Animal Protection Union of German-speaking Switzerland. The discussions proceeded with mutual confidence and understanding, and to the credit of all concerned a series of resolutions laying down the conditions acceptable to both parties was unanimously adopted, and subsequently ratified in full separate sessions by both the participating societies. The principles thus put forward for embodiment in legislation would have effects closely similar to those of our own Act, though naturally with a more direct reference to modern experience. Vivisection was to be restricted in Switzerland to scientific experiments under fully defined and legally prescribed conditions. These conditions were to provide that experiments on animals would only be made when necessary for a planned research, for diagnosis, or for treatment, and for demonstration only when films could not replace them; that higher mammals, and dogs in particular, would only be used when indispensable; that anaesthesia as full as for a human operation would be used for any operative procedure, the animal being killed while still anaesthetized, or, if its survival was a necessity of the experiment, carefully nursed and cared for, according to its particular needs; that experiments on animals would be confined to institutions under responsible scientific direction and subject to control by a public commission with mixed membership.

Here was an agreed policy which surely should have satisfied anyone genuinely concerned to ensure a proper limitation and control. Our Swiss colleagues were entitled to expect that all in their country who profess concern for the welfare of animals would concentrate their efforts on pressing for the early enactment of such strict and sane provisions. Their experience, alas, has been very similar to our own. An antivivisection organization in the Basle-City Canton has now presented to the cantonal legislature an initiatory petition (*Initiativbegehren*), bearing 10,000 signatures, for a law against vivisection, the terms of which the petition lays down. Some of the clauses of the Act thus demanded have an all too familiar aspect. In Clause 1 propaganda is curiously mixed with legal form by giving, in illustration of what is meant by "vivisection," a list containing horror-provoking descriptions, devised by a lurid imagination or culled, as Professor v. Muralt of Berne suggests, from the publications of many countries over several centuries, and having, in any case, no relation whatever to anything which could now happen in Switzerland; but carefully mixed with these are the normal procedures essential to physiological, pathological, and pharmacological researches. The real purpose of the clause appears in the final phrase, which entirely prohibits the application to dogs and cats of "vivisection," as thus inclusively as well as fantastically defined. Lest it might be supposed that such a prohibition would still allow research workers in the Basle-City Canton to find imperfect substitutes, Clause A would extend the prohibition to other higher mammals, such as horses, monkeys, and ruminants, if the use of these should be found to increase through the effect of Clause 1. Clauses 3 to 6 embody some of the points from the agreed proposals of the joint committee above mentioned, with the difference that demonstrations on the living animal are entirely prohibited, and that veterinary procedures for the treatment or killing of animals, and castration in particular, are not to count as "vivisection" for the purposes of the Act. Anything, therefore, is to be allowed for the benefit of food supply, property, or convenience, and only the search for life-saving and pain-preventing knowledge is to be obstructed; while the antivivisectionist spinsters of Basle are to retain the privilege of coddling their mutilated pets without embarrassment, and with the assurance that such an operation cannot possibly be used for any service to science. Sympathy with colleagues who have to face this sort of thing is tempered by an unworthy sense of relief at the discovery that this nauseous kind of hypocrisy is not, after all, a British monopoly. Clause 7 again fully displays the cloven hoof, making it the right and duty of the police, on receiving a sufficiently well grounded application from the Antivivisection Union or the Animal Protection Union, to visit all places where experiments on animals are conducted—at any time and accompanied by a delegation of the committee of the complainant Union—in order to make an inspection of the premises and to examine the protocols of the experiments.

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[1] 1939, 69, No. 40.

Small wonder that our Swiss colleagues are concerned to prevent the passing of an Act with such provisions, foreseeing the disastrous impediment which it would produce to the advancement of medicine by experimental research, in which their country takes high rank. The immediate threat is to research in the Basle-City Canton, which is not only a centre of academic research in its important university and medical school, but also the headquarters of the great and progressive pharmaceutical industries of which Switzerland is justly proud. In any case, our colleagues in Switzerland rightly foresee that a success in Basle would encourage immediate agitation for the extension of such cruel prohibitions and inquisitions to the rest of Switzerland. Their own broad-minded initiative has shown their willingness to do everything necessary to reassure genuine humane sentiment in their country. We could have told them, however, from our own experience that such a show of reason would be unlikely to appease their real opponents, but rather to excite them to a wilder frenzy and a more destructive ambition. The special number of our Basle contemporary gives evidence that the members of the medical profession of Switzerland are aware of the danger and are rallying to the defence, with the powerful aid of one of their leading journals.

THE NASOPHARYNGEAL FLORA IN HEALTH

Ten years ago the Ministry of Health published the results of an interesting investigation into the fluctuations in time of the nasopharyngeal bacterial flora of a small sample of the population of Manchester.[1] The inquiry was extended over two years, 1925–7, and the trend of the carrier rates observed during that period suggested that there might be some association between the changes in the bacterial flora of the nasopharynx and the epidemiological events in the city as shown by the prevalence of respiratory diseases. The duration of the inquiry was, however, not long enough to substantiate this association, and Sir George Newman, in his preface to the report, stressed the desirability of obtaining further data. The Ministry accordingly made arrangements for a more extensive study to be carried out in the Department of Bacteriology of the London School of Hygiene and Tropical Medicine, and has now published a full report of the results reached.[2] This inquiry lasted for as long as seven years and included the repeated swabbing of persons on the staff of the London School of Hygiene and of the boarders in a boys' public school in a south-eastern county. Additional observations were made at the Royal Hospital School at Greenwich, at an orphan home near London, and at the Ministry itself, so that data were available for groups of persons of different ages and living in different environments. This plenitude of material, analysed in over thirty tables, gives some very interesting results. Collating it with the previous study in Manchester and other published work, it is concluded that at any swabbing of a large group of adults in normal health and living in an urban community in a temperate zone some 20 to 40 per cent. will be found to be carrying *Strep. pneumoniae* in the nasopharynx and some 5 to 15 per cent. a haemolytic streptococcus; between 40 and 80 per cent. will be harbouring *H. influenzae* and 5 to 20 per cent. *N. meningitidis*. The frequency of isolation from the nose is uniformly very much lower for each organism, though it is interesting to note that in children the nasal and nasopharyngeal rates differ considerably less from one another than is the case with adults. Looked at in another light, the figures obtained at the School of Hygiene suggest that every person in the sample population would, at one time or another within a period of six years, have harboured *H. influenzae* and one or other type of pneumococcus in the nasopharynx, while at least three-quarters would have harboured the meningococcus and a haemolytic streptococcus.

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[1] *Report on Public Health and Medical Subjects*, No. 58. Ministry of Health, 1930.

[2] A Study of the Nasopharyngeal Bacterial Flora of Different Groups of Persons observed in London and South-East England during the Years 1930 to 1937. By Edith Straker, A. Bradford Hill, and R. Lovell. Together with Some Observations on the Occurrence of *H. influenzae* in the Trachea. By A. B. Rosher and W. T. Cole. Pp. 131. *Report on Public Health and Medical Subjects*. No. 90. Ministry of Health, 1939. H.M. Stationery Office. (2s. 6d.)

Clearly, as Sir Arthur MacNalty points out in his preface to the report, we need not hesitate to accept any epidemiological hypothesis on the grounds that it postulates a widespread distribution of potentially pathogenic bacteria in the absence of overt clinical disease. The pneumococcus tends, it is apparent, to be isolated more frequently in cold, damp weather than during hot, dry periods, while with the haemolytic streptococcus the association is reversed; but in neither instance are the seasonal fluctuations large. Such movements as there are are distinctly more pronounced in the nose than in the nasopharynx, and if the observations for the deeper respiratory passages, reported by A. B. Rosher and W. T. Cole, are included in the picture there are seasonal variations which are of considerable epidemiological interest. The figures then suggest that the cold weather of late winter and early spring is associated with an extension of the mucous surface colonized by the potentially pathogenic bacteria from the nasopharynx forward into the nasal cavities and downwards into the trachea and larger bronchi. There is also evidence that a similar extension tends to occur in association with epidemic influenza or the common cold. On the other hand, the findings give no support to the previous observations at Manchester that epidemics of respiratory disease are preceded by any characteristic change in the bacterial flora which might serve as a warning of the imminence of such an outbreak. Outbreaks of haemolytic streptococcal infection, for instance, seem to be caused, as Dr. F. Griffith has suggested, by the importation into a community of a strain of bacterium possessing an unusual power of spread rather than by a general increase in the frequency of the strains already present. It does not, of course, follow that factors, such as overcrowding, which promote or hinder contact infection are unimportant. They may largely determine the ease with which an epidemic strain may multiply when introduced to a community—a problem of some importance under conditions of evacuation.

Another observation of interest in relation to war-time conditions is the relatively high frequency of meningococci in the nasopharynx. During the last war a carrier rate of 10 to 20 per cent. was regarded as unduly high and a rate of 20 per cent. as a warning of an impending epidemic. Rates of these levels were quite frequently observed in the groups of adults swabbed during this investigation. There is also some evidence that the pneumococcus and the meningococcus tend to be associated in the nasopharynx, so that a person who is harbouring one of these organisms is subject to an increased chance of harbouring the other, and frequent carriers of the former tend to be relatively frequent carriers of the latter. Observations on persons suffering from colds are in conformity with the view that it is a virus infection. At the time that a cold begins there is no pronounced change in the nasopharynx or nasal flora. Swabs taken a week after onset indicate, however, that in the later stages of a cold pneumococci and *H. influenzae* frequently invade the nasal cavities and give rise to a muco-purulent inflammation. With regard to the serological types of pneumococci the report affords the first account based on extensive swabbing of the frequency of such types in the throat and nose of normal persons in this country. At the London School of Hygiene, where differentiation by type was made for over four years, the pneumococcal flora was relatively stable, Type III being consistently the most frequent and no strain showing any outstanding power of spread. Although it is probable that "epidemic" strains of pneumococci might display a power of spread analogous, if not equal, to that displayed by "epidemic" strains of haemolytic streptococci, no such occurrence did in fact arise, although it is likely that repeated interchanges of type took place between one person and another. It is also of interest to note that there was a tendency for each individual to establish a dominant flora containing one or more serological types of pneumococci and persisting over considerable periods of time.

In general, to quote the Chief Medical Officer, this work presents a picture of the normal nasopharyngeal flora, and of the changes it undergoes in response to a variety of external conditions, which is more detailed and extensive than any previously on record.

THE PRESIDENCY OF THE G.M.C.

The session of the General Medical Council—the one hundred and fiftieth in its history—which has been held during the past week has seen the retirement of Sir Norman Walker from the office of President, which he has held for eight years. Sir Norman Walker's " reign " has been exceeded in length by only two of his nine predecessors—the late Sir Henry Acland, who was President for thirteen years, and the late Sir Donald MacAlister, who occupied the chair for the very long period of twenty-seven years. The retiring President had already spent a quarter of a century in the service of the Council before he was chosen as Sir Donald MacAlister's successor, having been elected as one of the direct representatives for Scotland as far back as 1907. For many years he had been at the President's right hand as Chairman of Business, a position hardly less onerous than that of President itself. Among his other noteworthy work for the Council were two visits to all the medical colleges and several of the much more numerous medical schools of India. His report on his return from those visits influenced the Council in dealing with the delicate situation which presently arose with regard to the Indian Universities and their medical degrees. Sir Norman Walker can certainly claim that under his rule the dignity of the chair has been fully maintained and, moreover, that the business of the Council has been distinctly expedited. One of the achievements in which he takes special pride is that during his period of office the Council has sat on the average only for nine days in the year, whereas in the first decade of this century it customarily sat for fourteen. But that, of course, may be due to the fact that delinquent practitioners are not so numerous as formerly as well as to the businesslike methods of the President.

The last act of Sir Norman Walker in the chair was to induct his successor, Mr. Herbert Lightfoot Eason. Mr. Eason has been a member of the Council for fifteen years, having taken his seat as representative of the University of London in 1924. He has served with Sir George Newman as joint treasurer of the General Council and he is a trustee of the English Branch Council. Mr. Eason has had long experience in educational administration in London. He became a representative of the Faculty of Medicine on the Senate of his University in 1911 ; he has also been a representative of the Senate on the University Court, and in 1935–6 he was Vice-Chancellor. He is a member of the Governing Body of the British Postgraduate Medical School, and was a member of the Ministry of Health Postgraduate Medical Education Committee from 1925 until 1930. Another activity in which he is well known is his membership of the General Nursing Council, where he represents the Ministry of Health. But, of course, to Guy's men all over the Empire he is best remembered for his long tenure as Superintendent of that hospital, Dean of the Medical School, and Warden of the College. Those who have watched Mr. Eason on the Council itself and in other bodies are confident that he will prove a wise and able occupant of a position which is always very much in the public eye.

INDUSTRIAL HEALTH IN WAR TIME

The nineteenth annual report of the Industrial Health Research Board appears at an opportune moment,[1] for the work of the Board has a special relation to industrial problems arising in the production of munitions. The Board was, in fact, initiated in 1918 to carry on the work of the Health of Munition Workers Committee, a body which had been appointed in 1915 by Mr. Lloyd George, then Minister of Munitions, to advise on questions of hours of labour and other matters affecting the health and efficiency of munition workers. The health of many of these workers had been gravely affected by excessive hours of labour and poor environmental conditions, and though it is unlikely that the errors of control then committed will be repeated in so serious a form at the present time, it is important that the employers and managers of munition works should be reminded of them, in case they tend to regress. Employers are apt to forget that an increase in working hours does not mean a corresponding increase of output, and that very long hours may so far defeat their object—owing to the over-fatigue induced in the workers—that they result in an actual reduction of output. The investigations made by the Health of Munition Workers Committee were extended by the Board in a number of directions which the committee itself had no opportunity of exploring, and a study of the present report, and of the extensive summary given in last year's report, should be of great assistance to the managers of munition factories, as well as to those engaged in the direction of other industrial concerns.

Some of the work described in the report now published has naturally, from its peace-time character, only an indirect relation to war-time needs ; but the report states that much of this work will remain in abeyance during the war, and the energies of the investigators will be devoted for the time being to problems of immediate interest. Probably the most urgent of these problems relates to the duration of hours of work and the absence of days of rest, for we already hear of munition factories where there is little remission of labour on Saturday afternoons and Sundays. Of the present work of the Board which has a considerable war-time significance that on the effects of mass-production and on " speeding-up " may be mentioned. The physiological and psychological problems posed by the use of conveyers are being studied in the clothing and motor industries, and are found to raise points of considerable importance, both for the employers and the employed. The speeding-up standards set by efficiency engineers are opposed by representatives of labour on the ground that the health and comfort of the workers are being sacrificed to speed of production. The effects of the speeding are being studied objectively in terms of accidents, absenteeism, spoilt work, and output, and subjectively by the collection of personal information from several hundred workers. In addition, a general investigation of the subject of incentives is in progress. The question of accident-proneness arises in almost all industries, including those of munition production, and it is still being vigorously pursued by the Board's investigators. A report on the psychological functions involved in motor accidents has been prepared, but it was thought to be of too complex and technical a nature for the general public. Another report is therefore being written in non-technical language, which summarizes all the work on accident-proneness carried out by the Board.

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[1] H.M. Stationery Office. (6d.)

RACE, KNOWLEDGE, AND EMOTION

"It is no exaggeration to say that racial theories have led to the ruin and death of millions of people in modern times, and they are still potent destructive agencies." The quotation is from a clearly written brochure[1] in which Dr. G. M. Morant, one of the most distinguished members of Professor Karl Pearson's school of statistical anthropologists, sets out the results of modern anthropological investigation of European "races" in Central Europe. Dr. Morant makes clear the futility of the language criterion of race (the sole criterion of many journalists and politicians) and shows further that even the criterion of blood grouping, which, superficially considered, might seem to support a racial differentiation of Germans from others, does not do so. There is indeed a certain geographical orderliness in arrangement, but the "blood group data suggest forcefully that Germany is racially far more heterogeneous than any other country in Europe for which adequate records are available, and this fact is sufficient to demonstrate that the use of a common language by a number of peoples is no evidence of their common descent." The author of *Mein Kampf* at one point of his career would have cordially endorsed Dr. Morant's conclusion on this point; at page 428 he remarked that "nationality (Volkstum), or rather race, is not a matter of language but of blood." But at that time he believed in a mythical Aryan race, identified by his admirers with the Nordics of older anthropologists, and Dr. Morant has no difficulty in showing that the Nordics have virtually disappeared from Germany. "The difficulty now is to find any section of the population of Germany which could properly be called Nordic." Dr. Morant suggests that if knowledge of the scientific facts were universally disseminated "the absurdity of all racial conflicts would then be apparent." This is optimistic, or rather the implication that masses or even individuals will not often do what they know intellectually to be absurd is quite wrong.

> "You'll ask me, why I rather choose to have
> A weight of carrion flesh, than to receive
> Three thousand ducats? I'll not answer that:
> But, say, it is my humour: is it answered?"

Modern medical psychologists know more of the mechanism than did Shakespeare, but the psychological fact was as clear to him as to Freud himself. No more complete proof of the proposition that in a modern large-scale war there are no victors only vanquished could be asked than the events of 1914–39. Yet another war is in progress. But it is certainly true that although knowledge is not a spring of action (as Aristotle pointed out) knowledge does, very gradually and in certain fields of activity, control or deflect action. The practice of our own art is a striking proof of this. It is a more encouraging proof than the obvious illustrations of the physical sciences, because we are concerned with human beings afflicted in mind, body, or estate, and are ourselves human. Many plans of treating mental or bodily disease do stir emotions. Yet the sick in this war will be more rationally treated by us than the sick in the last war; and those sick in 1914–18 were better treated than the sick of 1899–1901. Even over the emotions knowledge has a little power. Dr. Morant's book will do some good even at the emotional level; intellectually it should convince and instruct many.

SYSTEMATIC SCREENING OF THE CHEST

Routine screening has been carried out on all recruits to the French army for several years, and more recently in the navy; it is also employed in the Swiss, German, Belgian, and Czechoslovak armies. It was adopted in Algeria in 1935, and J. Jalet, chief radiologist to the military hospital at Algiers, in a recent paper on this work,[1] states that the percentage of tuberculin-negative recruits is much higher than had hitherto been thought to be the case, particularly among European country people and North African natives. It has been found that during the first six months in barracks no less than 25 per cent. of the men become tuberculin-positive, the change being accompanied in some cases by mild constitutional symptoms of the primary complex or by acute pneumonic or pseudo-influenzal phthisis. These primary syndromes generally develop as a result of contact with unsuspected sputum-positive cases; systematic radiological examination in order to detect such cases should be undertaken not only at the time the recruits enter the army but also at intervals during their training and military career. Screening has been found to be rapid, sufficiently reliable, and compatible with the military authorities' need for recruits. It is not carried out at the time the recruits are admitted, but later in barracks after a large number have been eliminated by the preliminary general medical examinations. Of 19,305 recruits examined since 1934, of whom 13,688 were natives, 890, or 4.6 per cent., were found to have manifest or suspected lesions. After further radiological and clinical investigations 138 persons (0.71 per cent.), including eighty natives, were rejected, ninety-four permanently and forty-four temporarily; all the natives were rejected for good as there is no provision for their temporary rejection. Sixteen recruits, of whom nine were natives, were found to have tubercle bacilli in the sputum, while 318 (1.64 per cent.) were considered "doubtful" and placed under medical supervision. Dr. Jalet states that subsequent periodic screening disclosed further definite cases; these were not necessarily missed at the first examination but were probably the result of endogenous reinfection. In assessing the value of systematic screening, not only must the actual number of cases discovered be taken into account but also the time spent by the men in the military community before they are eliminated. It is of interest that there are fewer eliminations of young native recruits than of recruits from France. This accords with the smaller percentage of natives in whom the tuberculin test is positive, the greater incidence of disease among them later being due to the fact that they are more often the victims of a primary infection. Dr. Jalet has written a paper that merits close study at a time when a similar problem faces us in this country.

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[1] *The Races of Central Europe.* By G. M. Morant, D.Sc. London: George Allen and Unwin. (5s.)

[1] *Bull. Un. internat. Tuberc.*, 1939, 16, 302.

LADY NICOTINE

Precise information on the effects of tobacco smoking on the human organism is not easy to obtain, and clinical impressions seem often to be allowed to take their place. As with all impressions, these are rarely formed without much personal bias. Many consider that tobacco is harmful to the cardiovascular system and to digestion, whilst others look upon it as a useful sedative and as a stimulant to digestion—what the psychologists describe as an ambivalent attitude. As with all actions of chemical or physical agents on the body, psychological or conditioned-reflex effects cannot be excluded. The morning cigarette may, for example, be lauded as the ideal laxative by one who has conditioned his colonic evacuation to the post-prandial puff; where there is a wish there is a way, and no pharmacological action need be invoked. It is also a general impression that smoking lessens appetite, and that a cigarette will help one to stave off a meal. Many people in times of stress or strain are inclined to substitute smoking for food. In this connexion it appears that smoking may increase gastric acidity. Dr. Schnedorf and Dr. Ivy[1] in Chicago have reported a number of observations on the effect of tobacco smoking on salivary and gastric secretion in man and in dogs. Both in smokers and non-smokers cigarette smoking increased the flow of saliva; but out of a total of sixty individuals examined gastric secretion was decreased in just over half, unaffected in twenty-five, and slightly increased in only two. These findings are in contrast to those of Gray,[2] made without the same completeness ten years ago. Schnedorf and Ivy also noted little change in the emptying time of the stomach (certainly no increase in rate), but observed a remarkable inhibition of the hunger contractions of the empty stomach. This reflex inhibition, they showed, was due to vagal inhibition and did not occur in dogs given large doses of nicotine subcutaneously. The action of tobacco smoking on the colon was variable, but on the whole there seemed to be slightly increased motility. As these workers emphasize, however, tolerance to tobacco is variable, and with an overdose nausea, vomiting, and increased gastric peristalsis occur. For instance, three patients with gastric ulcers who were tested vomited and fainted after smoking two or three cigarettes on an empty stomach. The conclusion from these studies would seem to be that in patients with peptic ulcer the risk is in their substituting smoking for regular meals, and so prolonging hunger periods, rather than in any direct or indirect effect on gastric secretion or peristalsis. The action of tobacco on the cardiovascular system can be more precisely investigated. Using the electrocardiograph, Segal[3] noted an increase in the heart rate and a lowering of the T wave after smoking either ordinary cigarettes or those of the so-called de-nicotinized brands. Short and Johnson[4] showed the effects to be comparable to those following injection of adrenaline—increase in pulse rate, fall in skin temperature, and slight rise in blood sugar. Alteration in blood pressure varied considerably. Nicotine itself is a powerful vasoconstrictor when injected into cats or dogs, and Helmer and others[5] show that it can be extracted fairly readily from the urine of human beings who smoke. Most investigators have reported some temporary rise in systolic blood pressure after tobacco smoking, others note little appreciable change. Herrell and Cusick[6] have demonstrated on ten subjects an excessive blood-pressure response to cigarette smoking, and they regard this as due to a vasospastic idiosyncrasy. Pressures in some cases rose from 130 mm. Hg systolic to 195, and 70 diastolic to 110; a cold pressor test in these individuals gave similar findings. All these observations show the need for individual judgment in the use of tobacco and its especial danger in those who have, for instance, an excessive vasomotor reaction to cold. The fall in skin temperature from constriction of peripheral arterioles observed in many individuals after smoking must also suggest the need for care in those liable to peripheral vascular disease, among which, of course, endarteritis must be remembered.

Sir Arthur MacNalty's annual report for the year 1938 as Chief Medical Officer of the Ministry of Health is published this week (H.M. Stationery Office, 3s. 6d.), and we hope to give an account of its contents in an early issue. There is a chapter on the emergency hospital organization and medical arrangements, but this was written before the war and before the vast organization came into being.

The Harveian Oration (postponed from St. Luke's Day) will be delivered by Dr. R. A. Young on Friday, December 15, at 2.30 p.m., in the large Library of the Royal College of Physicians of London, Pall Mall East. The Commemoration Dinner will not be held this year.

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[1] *J. Amer. med. Ass.*, 1939, **112**, 898.

[2] *Amer. J. Surg.*, 1929, **7**, 489.

[3] *Amer. J. med. Sci.*, 1939, **196**, 851.

[4] *J. Lab. clin. Med.*, 1939, **24**, 590.

[5] *Amer. Heart J.*, 1939, **17**, 15.

[6] *Proc. Mayo Clin.*, 1938, **13**, 273.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

TREATMENT OF FRACTURES IN THE REGION OF THE KNEE

(EXCLUSIVE OF PATELLA)

BY

GATHORNE R. GIRDLESTONE, F.R.C.S.

Whenever a joint surface is fractured the main object of treatment is the restoration of the form and plane of the articular surface. This is more difficult in the knee than in any other joint because only a small part of the opposed articular surfaces is in contact at any one period. At the same time the restoration of the true plane is rendered more important because the knee is a weight-bearing joint lying between two bones of great length. Here again, although a complete range of movement is very desirable, full extension is of much more consequence than full flexion; furthermore, extension must be strongly controlled by active muscles, for there is no value in full extension if it cannot be fully maintained against gravity. The particular manœuvres directed towards these objects of restoration of form, of movement, and of muscular control are: (*a*) the exact reduction of the fracture; (*b*) the maintenance of traction; (*c*) the institution of early assisted active movements.

One principle is of paramount importance in the treatment of every fracture—namely, the assurance of free circulation in the whole limb.

Lower End of Femur

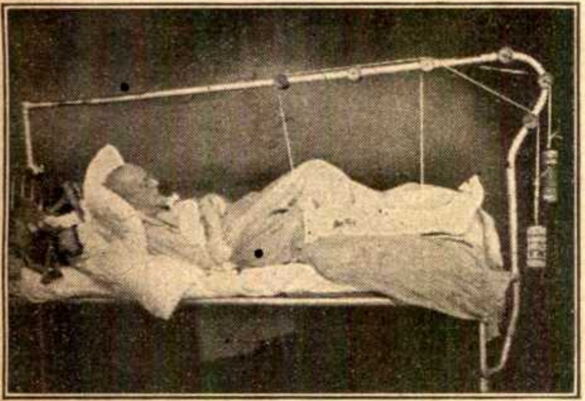


FIG. 1.—Showing the treatment of shattered head of tibia—second stage, with distraction provided and retained by two Steinmann pins, which can be seen in the close-up held in a thigh and leg plaster respectively, with a hinge applied to allow mobility.

Fractures at the lower end of the femur may be supracondylar, intercondylar, T-shaped, unicondylar, or fracture-separation of the epiphysis. Widespread extravasation within and without the joint occurs so quickly that accurate clinical diagnosis is seldom to be expected without radiography. As a first-aid measure immobilization of the lower extremity as it lies is imperative. This is best effected by the application of a Thomas splint. A temporary fixed traction can be used by putting a bandage clove-hitch round the ankle over the boot or shoe (in the latter case the ankle itself should be protected by adequate padding). If no proper splint is available the limbs should be tied together and their movement eliminated so far as possible by improvised splinting. This splintage should not be disturbed until an antero-posterior radiograph has been taken to determine the site and character of the injury; then, after division of the bandages, a cassette can be placed between the limbs and a lateral view be taken from the side without movement of the broken limb.

Supracondylar fracture is typically associated with posterior angulation of the distal fragment, a deformity commonly due to the originating force and maintained by the pull of the gastrocnemius. Reduction can almost always be achieved by a pin or wire inserted through the tibial crest just below the tubercle, the leg being slung in a Thomas splint with a flexing knee-piece at 150 degrees. This allows pull in the long axis of the femur and relaxes the gastrocnemius. Open reduction is rarely required. Prognosis is good, though even after accurate reduction there may be some permanent limitation of flexion, with otherwise good stability and range of movement.

Fracture-separation of Lower Femoral Epiphysis.—This is not very uncommon during the period of school life. Radiographs show that there is separation at the epiphysial plate rather than a true fracture; the distinction is most important, as the prognosis is less certain. Reduction must be exact, but even so premature fusion of the epiphysial line is common and one or two inches of shortening may result by the time the patient is full-grown. On the other hand, full function of the knee is readily restored. Reduction is best carried out by manipulation in flexion with radiographic control. It is often wise to retain about 90 degrees of flexion in plaster (pelvis to foot) for a fortnight or three weeks, then to put the limb in a Thomas splint with a flexion piece arranged as already described.

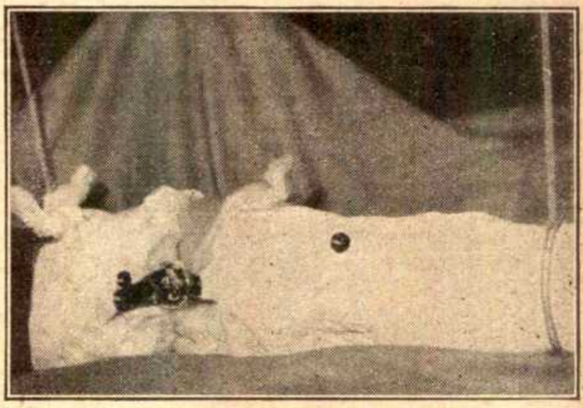


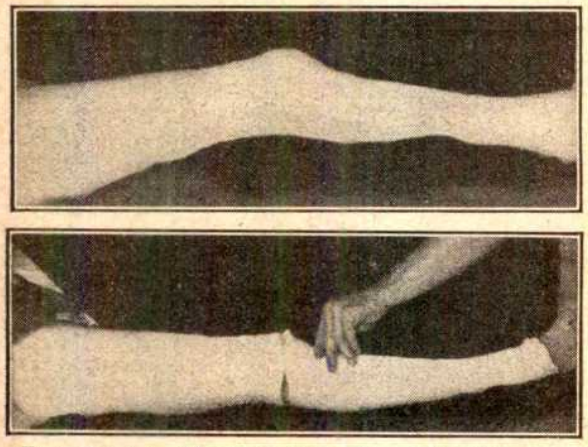
FIG. 2.—Close-up of Fig. 1.

T or Y fractures of the femur or tibia are often the result of direct violence, and then show little displacement. But any broadening of the articulating end of either is to be avoided. A Böhler clamp may be used, or the method, introduced by Kindersley of Bath, of applying, first, traction (of, say, 20 lb.), secondly, an Esmarch bandage (firmly), and, thirdly, a heavy hammer round both sides of the joint with moderation and with purpose in relation to the radiographs. This manœuvre achieves two aims: first, to correct the longitudinal alignment, and, secondly, to reduce the lateral separation; the former by skeletal traction applied through the crest of the tibia, and the latter by circumferential compression and moderate hammering, directed rather towards replacement than to impaction of the fragments. Operative correction followed by screw or bone-peg retention is advisable when radiographs indicate inadequate reduction; this operation can be performed without disturbance of the skeletal traction.

Fracture of one condyle is usually reducible by manipulation in the direction of over-correction of the lateral deformity, perhaps assisted by a few purposeful blows with a mallet over a felt pad. The reduction is always confirmed by radiographs. If accurate reduction has been achieved it can be maintained by a plaster from groin to toes with a good padded hold at the tuber ischii. Then after a fortnight hinges can be added, with the axis of movement very carefully and accurately placed and enough plaster cut away over the knee itself to allow of movement (Fig. 1). The plaster is of course slung and the usual pulley attachment for active movements instituted (Fig. 1). If, however, radiographs show that the position is imperfect, open reduction with fixation by bone peg is indicated. This operation can be done by working through a large window in the plaster. After the operation the hinges can at once be fitted. A technical point helpful towards the exact placing of the hinges is to take a true lateral radiograph with an "R" on the right side of the limb and an "L" on the left, arranged in the position which seems likely to be the right one.

Comminution.—In really difficult cases, especially where there is much comminution, the best method is reduction and retention by Steinmann pin or Kirschner wires, described above.

It was particularly for comminution of the upper end of the tibia that Kindersley's method was designed. In all these fractures of the tibia skeletal traction is even more essential than in those of the femur. Occasionally a detached condylar fragment of femur or tibia may be controlled by a Steinmann pin poked through the skin without open operation. It has already been mentioned that the exact displacement of the articular plates of the tibia is most important, and in cases in which good reduction has not been achieved it is wise to operate. At the operation the joint should be opened in order to control the reduction and to make sure that the menisci are in their right position. As a rule, especially on the outer side, it is better to remove a meniscus which appears to have been damaged or is likely to interfere with function.



FIGS. 3 and 4.—Plaster treatment for a rather late case of traction fracture of tibial spine

Spine of the Tibia.—A traction fracture of the anterior tibial spine is fairly common. It is, of course, pulled off by the anterior cruciate ligament. There is a resultant lack of the normal control of forward movement of the tibia on the femur, but the sign most commonly present is lack of full extension of the knee. This must not be mistaken for a cartilage displacement, which it closely resembles. Accurate antero-posterior and lateral radiographs will distinguish the condition. The treatment is retention for six to eight weeks in full extension. When the case is seen after a week or two full extension cannot be immediately achieved owing to an upward displacement of the spine and infiltration between it and its attachments. In such cases it is wise to put a plaster on in as full a degree of extension as can be readily obtained. Then by cutting and wedging the plaster once or twice at four- or five-day intervals it is possible to obtain full extension by gradually squeezing down the spine into position (Figs. 3 and 4) and so to avoid any stretching of ligaments. It is important that the plaster should get good well-moulded holds behind on the tuber ischii and on the back of the heel; in front, round rather than on the patella.

Complications

Haemarthrosis.—A fracture involving any joint is apt to cause haemarthrosis, but this complication is especially common and troublesome in the knee. Aspiration may be necessary, but it should be delayed or avoided unless the part is very tense and painful. No attempt should be made to get rid of the whole content of blood, for this is both impracticable and undesirable. The earlier and the more complete the relief by aspiration the more likely is the joint to fill again.

The Menisci.—In the knee, too, the presence of the semilunar cartilages adds to the delicacy and complexity of its internal mechanism. The menisci are often troublesome in depressed fractures of the articular plates of the tibia.

Patellar Surface of Femur.—Not long ago I saw a young lady about 21 years of age whose knee was crushed by a car which had been left standing on a hill and had run away. The fore-part of the external condyle of the femur had been crushed inwards across the front of the patellar surface. Such a displacement is not clearly shown in radiographs, and in this case was not recognized. When I saw her the knee was locked in full extension. It was fortunately possible to restore free movement by the removal of the patella and by an extensive plastic operation on the quadriceps and external vastus over a fascia lata transplant.

Ischaemia or Gangrene.—Loss of circulation may be due to an unrelieved popliteal haematoma or even to perforation or thrombosis of the main popliteal vessels following delay in reduction or adequate fixation of supracondylar fractures. Early operation is indicated. The signs and symptoms are pain, cold pulseless foot, and, as a rule, a large extravasation in the popliteal space.

Injuries to Nerves.—These are rare as a direct result of the fracture. I have had one case in which the sciatic nerve was almost divided by the sharp knife-like oblique edge of the lower femoral fragment. But subsequent paralysis of the external popliteal nerve is common and due to pressure on the nerve behind the head of the fibula or as it winds round its neck. Numbness, tingling, and loss of voluntary dorsiflexion of the toes are indications for the immediate relief of pressure at this situation.

Compound Fractures

Compound fractures involving the knee demand immediate operative treatment. After thorough cleansing of the skin by soap and water the edges of the wound are excised and all bruised and avascular tissues accurately cut away. Small detached fragments of bone are removed, and if the patella is extensively fragmented it is better excised. Opinions differ as to the advisability of prolonged lavage of the joint. The wounds need not be sutured, though when the patella has been removed a central suture with fine non-chromicized catgut is best. The suture should not be drawn tight. In cases in which drainage is likely to be required two vertical lateral incisions should be made and fine non-chromicized catgut sutures used to prevent premature closure. Two stitches are applied in each wound, one in front and one behind. By each the skin and perisynovial tissues are gently sewn together; thus granulation is prevented. Following the operation immobilization is essential. It is my practice to carry this out by fixed traction, preferably skeletal, on a Thomas splint with a flexion piece. In my last three cases of this serious type where lateral drainage was necessary I have obtained extraordinarily favourable results by a method learned from Dr. Maurice of Marlborough. In this method the surgeon once a day *very gently* grasps the back and sides of the knee with his two hands, exercising *mild* pressure on the posterior pouches and gently lifting the knee upwards to give it just 5 or 10 degrees of flexion movement. This induces an escape, through the lateral incisions, of fluid from the posterior pouches, which otherwise so insidiously and disastrously spreads into the intermuscular planes above and below the knee.

Acute Septic Arthritis

Whenever this occurs, with illness and high fever, much more radical drainage is necessary. Both lateral ligaments are divided transversely and the incisions are carried back round the posterior pouches with due regard to the popliteal vessels and nerves; the knee is immobilized completely on a Thomas splint with about 20 degrees of flexion in order that ankylosis may take place at a useful angle. If pus spreads into the intramuscular planes amputation is indicated, and should be carried out without delay by a modified guillotine method, followed by skin traction on a short Thomas splint with a terminal ring.

An article on the health of munition workers by Dr. H. M. Vernon, investigator to the Industrial Health Research Board, appears in the November issue of *Industrial Welfare and Personnel Management* (published by the Industrial Welfare Society, 14, Hobart Place, S.W.1, price 1s.). Dr. Vernon, who carried out many investigations for the Health of Munition Workers' Committee appointed by Mr. Lloyd George in 1915, in this article, the first of a series, summarizes the results of the experience of that committee in dealing with the problems of the last war, and indicates their application to the organization of work on the home front in the present struggle. The most important point Dr. Vernon emphasizes is that the experience of the last war showed how foolish it was to work excessively long hours in the hope of securing a larger output. Employers should not be discouraged by the fact that output will fall temporarily after hours are reduced, until the workers get into their stride under the new conditions. Another important conclusion of the Munition Workers' Committee was the need for the appointment of welfare supervisors in munition and other factories.

A FIRST-AID POST IN LONDON

The following article has been written by two medical Students, Mr. Desmond O'Callaghan and Mr. R. A. Shooters of St. Bartholomew's Hospital Medical College, who have been working since the beginning of the war at the first-aid post established at Aldermanbury, in the City of London.

First-aid posts have been instituted to relieve the casualty receiving hospitals from a rush of minor casualties and to act as filters passing on only cases whose injuries necessitate a period of treatment in hospital. Thus "walking" and "sitting" cases will all be directed to first-aid posts, but in addition "stretcher" cases may arrive carried in because they have occurred near to an aid post or because transport direct to hospital is for some reason delayed. By telephoning to the local control centre an ambulance can be summoned to convey "stretcher" cases to hospital, other cases being sent home after treatment. It is obviously an advantage to have first-aid posts situated in a hospital or other medical building, but in the City of London the only hospital, St. Bartholomew's, is a casualty clearing hospital. It has therefore been necessary to establish the five first-aid posts in non-medical buildings.

The post to which we have been attached since the beginning of the war is situated in the basement of a modern steel-framed commercial building five stories high, all the floors being constructed of reinforced concrete. All the windows which look on to areas, and also the pavement lights, have been heavily sandbagged, so that the personnel of the post and any casualties under treatment will be safe against everything but a direct hit from a very large bomb.

Arrangements for Admission

There are three separate entrances into the post. Casualties, male and female, who were not contaminated by blister gas would be admitted through the double doors of the main entrance, and would proceed down a wide flight of stairs, through an air lock, into the male and female first-aid rooms. These have been made quite simply by dividing a large room, formerly a restaurant, into two sections by hessian screens. What was a serving counter is used as an office; folding tables for drugs, dressings, and instruments, and trestle tables for stretcher cases requiring treatment, are provided. Two improvised tables, common to both male and female, support the sterilizer and poison cupboard; and chairs, placed back to back, are provided for sitting cases.

Casualties contaminated by blister gas would enter from the opposite side of the building, where there are separate entrances for men and women. Stencilled placards guide the casualties to their respective cleansing rooms. The male cleansing room is a cloakroom-lavatory which has been converted by the addition of sprays attached to the wash-basin taps; a bar of cement has been laid across the floor to localize waste water, while a hole has been made in the wall to drain away the water to a gully in an area outside. The female cleansing room, the former kitchen, is planned on the same simple lines. These changes have been made at little cost and have involved no structural alterations. "Stretcher" cases which have been contaminated would be admitted by the main entrance, but would be stripped before being taken into the post, where they would first of all be taken into the male or female cleansing room, as the case may be, and then carried into the appropriate first-aid room.

The medical equipment of the post is that prescribed in the Ministry of Health Circular 1789.

Personnel of the Post

The personnel of the post comprises three doctors, who will only attend after an actual air raid on the City

—excepting one who, as medical officer in charge, exercises general supervision over the organization and training; a member of the staff of the Public Health Department who acts as the representative of the medical officer of health in the administration of the post; a trained nurse; four resident medical students; and nineteen whole-time paid first-aiders, who have twenty-four hours on duty followed by twenty-four off. In addition there are some fifty unpaid part-time volunteers, who have undertaken to give assistance at the post in the event of an air raid occurring when they are at work in the City.

If a first-aid post is to discharge its function of dealing with all "walking" and "sitting" casualties, and in addition be capable of giving temporary treatment to such "stretcher" cases as may be carried into the post from a bombed area in the vicinity, its personnel must be trained up to, and if possible beyond, the pre-war first-aid standard. This training should be supplemented with as many and as varied practical exercises as possible.

Interim Practice for the Staff

Though fortunately up to the time of writing London has not been raided, the personnel of the first-aid posts have not been idle. Lectures and demonstrations have been given daily, and combined exercises with "casualties," both wounded and gassed, have been carried out regularly. But in addition it has happened that many cases of injury which have occurred in the streets or in buildings near the post have been brought in for treatment. From a considerable number of cuts, lacerations, burns, and fractures the following two cases will illustrate the application of strictly first-aid principles and also demonstrate the necessity for personnel who have practical experience.

CASE I

A man aged 62 walked into the first-aid post with the assistance of a policeman. Between puffs at his cigarette he complained of pain in the region of the left hip. Ten minutes previously he had fallen down three steps and landed on his left side. He felt no severe pain at the time, and at once could move his left leg slightly.

Examination.—He was not pale or sweating and did not appear to be in any pain. His left leg lay in its normal position, with the pelvis not tilted. There was no "rolling out" of the foot and no local bruising. There was a tender point above the great trochanter. Measurements showed the absence of true shortening. At the hip active flexion was limited to 30 degrees, but extension was full. Passive adduction and abduction caused pain just above the trochanter on approaching their full extent. Passive flexion over 30 degrees caused pain. Diagnosis of fractured neck of the femur was made.

Treatment.—(1) A stretcher was prepared by the R.A.M.C. method, using two blankets folded to give two thicknesses above and four below. The patient was placed on a stretcher. (2) The patient's feet were tied together with a triangular bandage. (3) A long Liston splint, padded by wrapping with a blanket, was applied to the left side, extending from axilla to beyond the heel, and was held in place by seven triangular bandages tied by the St. John method. (4) The patient was given a cup of hot sweet tea and sent, with a hot-water bottle, to C.C.H. (St. Bartholomew's Hospital) in an ambulance. (The time from entry of patient to arrival at hospital was fifteen minutes.)

Radiographs confirmed the diagnosis.

CASE II

A cook aged 30 slipped and fell on her left shoulder while at work. She walked to the first-aid post with her employer, complaining that her left arm was useless and her left shoulder was painful.

Examination.—She was a tearful, extremely obese woman. Her left forearm was supported by her right hand. No obvious shortening or asymmetry was observed. No bony points were visible, and local examination was difficult on account of the patient's fatness. There was no palpable tenderness along the shaft of the humerus and no crepitus. Examination to elicit the position of the humeral head was not persisted with on account of difficulty. Active movement was not present, and all passive movements were prevented by pain at the shoulder. No abnormality was detected in the clavicle. A provisional diagnosis of fracture of the neck of the humerus was made.

Treatment.—(1) The patient was given tea and was wrapped in a warm blanket. (2) The arm was placed in a large Red Cross arm sling. In view of the adequate support provided by the size of the patient's chest it was considered unnecessary to bind the arm to the side. (3) The patient was sent as a "sitting" case to the C.C.H.

Radiographs confirmed the diagnosis.

Discussion

These two cases illustrate three principles for first-aid posts: (1) not to try to accomplish too much at the patient's expense; (2) the inadvisability of a too thorough search for a fracture; (3) treatment of injuries is not stereotyped, and circumstances alter cases.

In the event of an air raid these might have been "walking" cases. In spite of the severe injuries present there would have been little to show in the way of physical signs, and they would have presented considerable difficulty to a first-aider lacking in practical experience. As can well be imagined, one of the main factors in arriving at the diagnosis in Case I was the fact that a similar case had been seen in the past. This again stresses the necessity for a large variety of practical exercises. The most instructive and at the same time the most interesting is one in which a dummy casualty is placed in some part of the first-aid post. This provides useful practice both in transport and treatment of the patient.

The patient in Case I walked in, and left on a stretcher —a thing that can be expected to occur often. As all stretchers are of a standard type the patient can remain on the same stretcher from the first-aid post to, if necessary, the base hospital. Time is not lost and the return of stretchers to depots is facilitated.

The first-aid post personnel should have training in the proper method both of placing patients on stretchers and of carrying stretchers. The post should also be laid out with an eye to providing adequate room for circulation of stretchers. The R.A.M.C. plan for advanced dressing stations does this admirably.

As a last point it is important that the labelling system be adequately understood. If it is not the records for the Ministry of Health will be incomplete, and if in particular the spaces for time, morphine, A.T.S., and tourniquet are not filled in on the Label M.P.C. 46 or written in blue pencil on the patient's forehead the patient will suffer. Simplicity should be the ideal, and this is fulfilled by Label M.P.C. 46.

Summary

An account is given of the purpose and organization of a City of London first-aid post.

Two cases are taken to illustrate first-aid casualties and the routine casualty treatment at a first-aid post.

They also show the necessity for a high standard of first-aid training, and that this training should be predominantly practical.

The type of training being carried out is shown.

We are indebted to Dr. Charles F. White, medical officer of health to the City of London, for permission to describe this first-aid post and our experience therein.

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Nova et Vetera

SECONDARY HAEMORRHAGE IN 1582

A Royal Case History

The attempted assassination of the Prince of Orange, also known as William the Silent, is fully recounted in Motley's *Rise of the Dutch Republic,* and its detailed description of the circumstances affords considerable medical interest. The account is fully documented, so that there is every reason to suppose that it is an accurate one, and indeed it rings true. The relevant extracts of the history are as follows:

> On Sunday, the 18th of March, 1582 . . . the Stranger suddenly drew a pistol and discharged it at the head of the Prince. The ball entered the neck under the right ear, passed through the roof of the mouth, and came out under the left jaw-bone, carrying with it two teeth. The pistol had been held so near that the hair and beard of the Prince were set on fire by the discharge. He remained standing, but blinded, stunned, and for a moment entirely ignorant of what had occurred. As he afterwards observed, he thought that perhaps a part of the house had suddenly fallen. Finding very soon that his hair and beard were burning, he comprehended what had occurred, and called out quickly, "Do not kill him—I forgive him my death!". . .
>
> The Prince, supported by his friends, walked to his chamber, where he was put to bed, while the surgeons examined and bandaged the wound. It was most dangerous in appearance, but a very strange circumstance gave more hope than could otherwise have been entertained. The flame from the pistol had been so close that it had actually cauterized the wound inflicted by the ball. But for this it was supposed that the flow of blood from the veins which had been shot through would have proved fatal before the wound could be dressed. The Prince, after the first shock, had recovered full possession of his senses. . . .
>
> The surgeons implored his silence, as speaking might cause the wound to prove immediately fatal. He complied, but wrote incessantly. . . . For eighteen days he lay in a most precarious state. . . . But the hopes [for his recovery] which had gradually been growing stronger were on the 5th of April exchanged for the deepest apprehensions. Upon that day the cicatrix by which the flow of blood from the neck had been prevented, almost from the first infliction of the wound, fell off. The veins poured forth a vast quantity of blood; it seemed impossible to check the haemorrhage, and all hope appeared to vanish. The Prince resigned himself to his fate, and bade his children "good-night for ever," saying calmly, "It is now all over with me."
>
> It was difficult, without suffocating the patient, to fasten a bandage tightly enough to staunch the wound, but Leonardo Botalli of Asti, body physician of Anjou, was nevertheless fortunate enough to devise a simple mechanical expedient which proved successful. By his advice, a succession of attendants, relieving each other day and night, prevented the flow of blood by keeping the orifice of the wound slightly but firmly compressed with the thumb. After a period of anxious expectation, the wound again closed, and by the end of the month the Prince was convalescent. On the 2nd of May he went to offer thanksgiving in the Great Cathedral, amid the joyful sobs of a vast and most earnest throng.

Surgical Commentary

The wound was a remarkable one in passing close to so many important structures without proving immediately fatal. It seems doubtful whether any big vessel can have been damaged in the first instance, as the flame of the pistol discharge could scarcely have prevented severe primary arterial haemorrhage. But the flame did perhaps disinfect the wound. The subsequent infection which caused the secondary haemorrhage might have occurred either by reinfection from outside (antiseptic wound dressing being then practically unknown), or else from the mouth. Against the latter view, however, is the fact that the haemorrhage did not take place into the mouth, but through the original wound (though whether of ingress or egress we are not told).

The treatment was masterly in its simplicity and effectiveness. It resembles the method described in the older textbooks as a treatment of aneurysm, and also the first-aid treatment of haemorrhage from the common femoral artery.

In conclusion one may add that the Prince made a perfect recovery, but only to be again the victim of an assassin's pistol. Two years later he was shot through the heart and died within a few minutes. So ended the career of a noble man, and, as Motley has it, the guiding star of a brave nation.

ROBERT C. TAYLOR, F.R.C.S.

AMERICAN NOSOGRAPHY

Dr. David Riesman delivered the Shattuck Lecture at Boston on May 31, 1938.[1] He took as his subject "American Contributions to Nosography." He reviewed the discoveries and early descriptions of disease by American writers, gave some biographical details, and in several instances a transcript of their observations. The lecture, therefore, is useful as a source of information because he appends references, and is readable, for he has the gift of a ready pen. Almost the earliest writer to draw attention to new factors in disease was Benjamin Rush, "the Father of American Medicine," who in 1801 described the case of a lady whose rheumatism ceased after the extraction of a decayed tooth. Focal infections as factors in chronic affections engaged the attention of many physicians and surgeons, but it was not until 1912 that they were studied in detail by Frank Billings of Chicago. Hezekiah Beardsley drew attention about 1784 to the condition now known as congenital hypertrophic stenosis of the pylorus and gives details of a case occurring in a boy who died at the age of 5. John C. Otto, too, who lived from 1774 to 1844, recognized that haemophilia was transmitted solely through the mother, and records the family history of a case which had been under his care. W. W. Gerhard (1809–72) distinguished typhoid from typhus clinically before the two diseases had been recognized in Europe.

Some Eponyms

George Sumner Huntington described "Huntington's chorea" in 1872, when the disease was devastating Long Island. John M. Riggs gave his name to "Riggs's disease" before it was known as pyorrhoea alveolaris, and the names of Weir Mitchell and G. M. Beard are inseparably connected with neurasthenia and the rest cure. "Milroy's disease," now called angioneurotic oedema, was described in 1892 by W. F. Milroy, professor of clinical medicine at Omaha. Sir William Osler's name, says Dr. Riesman, is more especially connected with erythema exudativum *or* nodosum, which might well be called "Osler's disease," for he drew attention to the visceral manifestations.

The American contributions to dermatology are considered. Duhring, Schamberg, Fordyce, Dercum are mentioned, and there is an excellent account of the American discovery of tularaemia in 1904. Attention was first drawn to it by Ancil Martin, an ophthalmic surgeon of Phoenix, Arizona, but it was not until 1912 that McCoy and Chapin isolated the microbe and called it *Bacterium tularense,* after Tulare County, California. Still later Edward Francis of the United States Public Health Service demonstrated in his own person that its micro-organism, carried by the deer-fly, could penetrate the unbroken skin.

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[1] *New Engl. J. Med.,* 1938, **219**, 591.

STANDARDIZATION FOR STRETCHERS

The standardization of stretchers and ambulance equipment generally has been under discussion for some time. Five years ago attention was drawn to the unsatisfactory position of stretchers and stretcher gear. The question arose again later when a large hospital in the south-west of England was installing new equipment and endeavoured to standardize its gear to take the stretchers which arrived at its doors. The enormous development of blocks of flats, with lifts seldom constructed large enough to take existing patterns of stretchers, also brought home the difficulty. In mines, again, the need for standardization was apparent; we are told that when an injured miner is placed on an ordinary stretcher in the ambulance room, not infrequently the stretcher will not go into the ambulance that is sent to fetch him to hospital.

The matter was eventually considered by the Hospitals Committee of the British Medical Association, and, through the Council, was referred to the British Standards Institution, a body which, with its innumerable committees, has effected standardization in many directions in industry. The Ministry of Health endorsed the request to the Institution, and accordingly a technical committee was set up with representatives, amongst others, of Government Departments interested (including the three fighting services), the British Red Cross Society and St. John Ambulance Association, the Mining Association of Great Britain, and the British Medical Association, whose representative, Dr. Lockhart, was elected chairman.

A draft specification has now been issued under the authorization of the council of the Institution and has been sent to all interested parties for their comments and suggestions. Very large numbers of stretchers are being manufactured at the present time, and it is considered essential that a British standard should be produced and approved without delay. For the present, therefore, the proposed standard will be limited to dimensions, and the questions of materials for stretchers may be taken up at a later date.

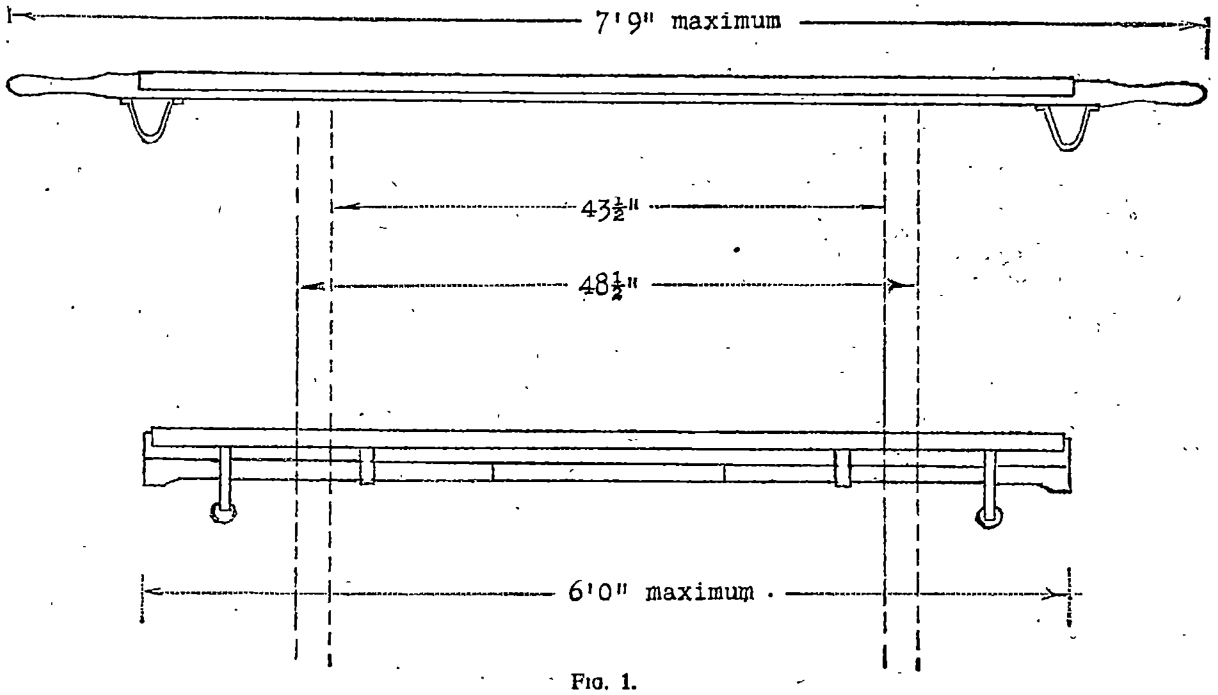


FIG. 1.

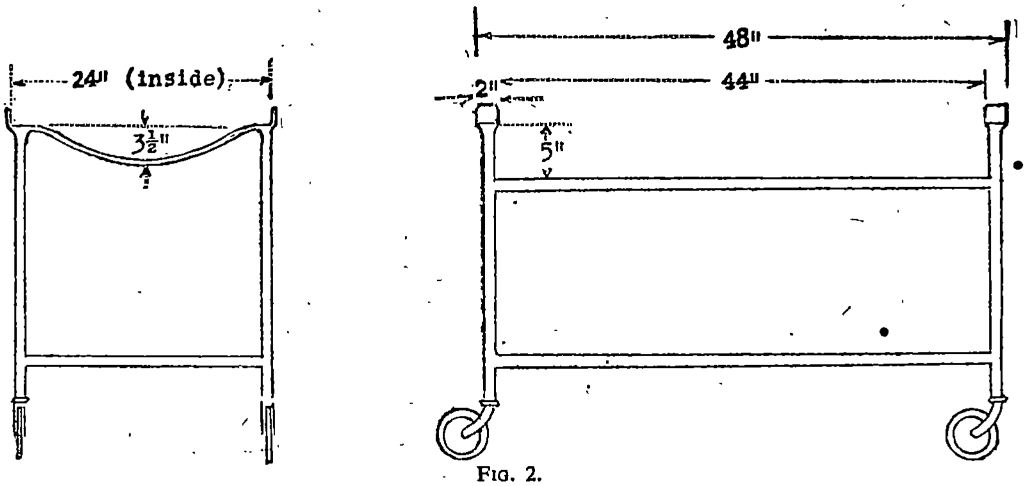


FIG. 2.

Sizes of Stretchers

It is recommended that the overall length of the stretcher with fixed handles should not exceed 7 ft. 9 in. when the handles are projecting, and that 6 ft. should be the standard length for the stretcher with sliding handles when these are pushed in underneath. This length has been used by the fighting forces since the last war, and for many years by the L.C.C. ambulance department. A very strong recommendation is that all ambulances in future should be built to accommodate the 7 ft. 9 in. stretcher, and that in large buildings, factories, and flats the lifts, staircases, and corridors should be constructed in such a manner that the 7 ft. 9 in. stretcher may be reasonably manipulated and turned. The 6 ft. stretcher can be readily fitted into the smaller ambulances or vans converted for the purpose.

A further recommendation is that the length between any portion of the wheels or runners should be either more than 48½ in. or less than 43 in. so that such wheels or runners may be clear of the hospital trolley supports (see Fig. 1). For the same reason the overall width of any portion of the wheels or runners, for a vertical distance of 2 in. measured from their lowest point, should not exceed 22½ in., nor should their overall width at their lowest point be less than 22 in.

The locking devices in ambulance bracket supports and on hospital trolleys—that is to say, the locks or stops on the rails against which the wheels of the stretcher rest while it is in the ambulance—are of divers patterns, and fail to act except with a limited range of stretchers.

In place of these mechanical locking devices it is strongly recommended that straps with buckles should be riveted to the angle runners used for holding the stretcher in position, thereby ensuring the complete firmness of the stretcher while in transit. In other words, the lock should be disregarded, and the strap fixed to the ambulance runner, being wrapped round the stretcher handles and joined up. This forms an effective hold irrespective of size of stretcher or runners, and is a simple device universally applicable.

Three sizes are suggested for the steel angles serving as stretcher carriers in ambulances, but the size favoured is the largest of the three: 2 in. in depth and 2½ in. in horizontal projection. A smaller size is more easily obtainable, but does not seem sufficient to obviate the risk of upset on a sudden lurch of the ambulance.

With regard to hospital trolleys to accommodate stretchers it is considered that the manner of support should be by angle brackets attached to the uprights, the width of the brackets (in the longitudinal direction of the trolley) to be 2 in., and their distances apart to be, internally, 44 in. and, externally, 48 in. The width between the inner vertical faces in the transverse direction should be 24 in. and each bracket project horizontally inwards for a distance of at least 2 in. The internal vertical height of each bracket should be not less than 1½ in. or more than 2 in. The top of the longitudinal connecting rails of the trolley should be at least 5 in. below the horizontal face of the bracket which supports the stretcher, and the transverse connecting rails are to form a curve between the brackets, the centre of which is 3½ in. below the horizontal face. A glance at the two drawings in Fig. 2 will make this clear.

In view of the national emergency it is felt to be very important that this equipment should be standardized as soon as possible, and the dimensions given above for stretchers, carriers, and trolleys are those most generally in use. It must be repeated that this is only a draft specification, and the British Standards Institution, whose address is 28, Victoria Street, S.W.1, would be grateful for comments.

A course of six lecture-demonstrations on the first-aid treatment of air raid casualties will be given by members of the honorary medical staff of the Manchester Royal Infirmary in the clinical lecture theatre there, each beginning at 3.30 p.m. on Tuesdays and Fridays, as follows: December 5, Professor H. Platt, fractures of limb bones, and injuries to joints, simple and compound. December 8, Mr. W. R. Douglas, (*a*) shock and resuscitation of shocked patient; (*b*) general first-aid treatment of wounds, burns, etc. December 12, Professor G. Jefferson, head and spinal injuries; Mr. E. Matthews, jaw injuries. December 15, Professor J. Morley, abdominal injuries; Mr. A. Graham Bryce, chest injuries. December 19, Dr. F. R. Ferguson, air raid neuroses and their treatment. December 22, poisoning by mustard gas and other poison gases, with special reference to the treatment of lesions of (*a*) eyes—Dr. J. Wharton; (*b*) skin—Dr. P. B. Mumford.

OUT-PATIENT FACILITIES AT THE LONDON VOLUNTARY HOSPITALS

As some confusion still exists among the general public as to the availability of out-patient facilities at the London hospitals, the King's Fund wishes it to be known that the great majority of the departments are now functioning.

On the outbreak of war it was necessary in many cases to curtail out-patient department activities owing to the movement of part of the medical and nursing staff to hospitals on the outskirts of London. It was, however, possible to keep them open sufficiently to deal with urgent new cases, and since then strenuous efforts have been made to re-establish them on the full pre-war scale. Among the more important hospitals where the majority of the clinics are functioning regularly are the following, comprising thirteen teaching hospitals. thirty general hospitals, and thirty-four special hospitals:

Teaching Hospitals

Charing Cross Hospital; Guy's Hospital; King's College Hospital; London Hospital; Middlesex Hospital; Royal Free Hospital; St. Bartholomew's Hospital; St. George's Hospital; St Mary's Hospital; St. Thomas's Hospital; University College Hospital; Westminster Hospital; West London Hospital.

General Hospitals

West: Acton Hospital; King Edward Memorial Hospital, Ealing.

West Central: London Homoeopathic Hospital.

North-West: Hampstead General Hospital; National Temperance Hospital; St. Andrew's Hospital, Dollis Hill; Willesden General Hospital.

South-West: Battersea General Hospital; Bolingbroke Hospital; Nelson Hospital; Princess Beatrice Hospital; Putney Hospital; Weir Hospital.

South-East: Croydon General Hospital; Dreadnought Hospital; Miller General Hospital; St. John's Hospital, Lewisham; Woolwich War Memorial Hospital.

East: Connaught Hospital; East Ham Memorial Hospital; German Hospital; King George Hospital, Ilford; London Jewish Hospital; Metropolitan Hospital; Mildmay Mission Hospital; Poplar Hospital; Queen Mary's Hospital for the East End; St. Mary's Hospital, Plaistow.

North: Prince of Wales's General Hospital; Royal Northern Hospital.

Special Hospitals

Children: Belgrave Hospital for Children ; Evelina Hospital for Sick Children; Hospital for Sick Children; Invalid and Crippled Children's Hospital ; Princess Elizabeth of York Hospital for Children ; Princess Louise Kensington Hospital for Children ; Queen's Hospital for Children ; Victoria Hospital for Children.

Women: Grosvenor Hospital for Women ; South London Hospital for Women and Children.

Maternity: City of London Maternity Hospital; Mothers' Hospital of the Salvation Army ; Queen Charlotte's Maternity Hospital.

Chest: Hospital for Consumption, Brompton ; London Chest Hospital ; Royal Chest Hospital (branch of Royal Northern Hospital).

Ophthalmic: Central London Ophthalmic Hospital; Royal London Ophthalmic Hospital, Moorfields ; Royal Westminster Ophthalmic Hospital ; Western Ophthalmic Hospital.

Ear, Nose, and Throat: Central London Throat, Nose, and Ear Hospital ; Golden Square Throat, Nose, and Ear Hospital.

Nervous: Maida Vale Hospital for Nervous Diseases ; National Hospital, Queen Square ; West End Hospital for Nervous Diseases.

Other Special Hospitals: All Saints' Hospital ; Hospital for Tropical Diseases (branch of the Dreadnought Hospital) ; Mount Vernon Hospital and Radium Institute ; Royal Cancer Hospital ; Royal National Orthopaedic Hospital ; St. John's Hospital for Diseases of the Skin ; St. Mark's Hospital ; St. Paul's Hospital ; St. Peter's Hospital for Stone.

King Edward's Hospital Fund (10, Old Jewry, E.C.2) is shortly to issue a new edition of its Out-patient Time-table giving the latest information on when clinics are open. This will be sent to all the 8,000 doctors within the King's Fund area (eleven miles from St. Paul's). Pending the receipt of this time-table, any doctor who cares to telephone the Emergency Bed Service will be given the information he requires.

STANDARDS FOR PROLACTIN AND FOR THE GONADOTROPHIC SUBSTANCE OF PREGNANT MARES' SERUM

It was stated in our issue of May 13, 1939, that the third International Conference on the Standardization of Hormones, held at Geneva in 1938, had decided that international standards should be established for certain hormones of the anterior lobe of the pituitary gland and analogous substances found in urine and serum, and that international units should be defined in terms of a weight of each such standard. It was further decided that the final preparation of these standards, their dispensing in a form suitable for the use of the laboratory worker, their storage, preservation, and subsequent distribution should be undertaken by the National Institute for Medical Research, Hampstead, London. The first of these new standards, as announced earlier in the year—namely, that for the gonadotrophic substance of human urine of pregnancy (chorionic gonadotrophin)—was established in May of this year.

We are now asked to announce that the preparation of two additional international standards has been completed—namely, for the gonadotrophic substance of pregnant mares' serum and for the lactogenic (crop-gland stimulating) substance of the anterior lobe of the pituitary gland. The former standard has been prepared from substantial amounts of material generously provided by five manufacturing firms in four different countries, and the latter from material supplied by seven manufacturing firms and two research institutes in five countries. In the case of each standard the individual samples were examined by members of the conference and a suitable mixture was then made to serve as the respective international standard, and finally dispensed in the form of tablets which have been packed in sealed tubes. In the case of each standard each tablet contains approximately 100 international units.

Dispensing and Distribution

The international standard for the gonadotrophic substance of pregnant mares' serum is dispensed in the form of 25-milligramme tablets, each sealed tube containing ten of the tablets, and the international unit has been defined as the specific gonadotrophic activity contained in 0.25 milligramme of the standard preparation. The international standard for prolactin is dispensed in the form of 10-milligramme tablets, each sealed tube containing ten of the tablets, and the international unit has been defined as the specific activity contained in 0.1 milligramme of the standard preparation.

As in the case of the international standards for other hormones, drugs, and vitamins, the above international standards are held, on behalf of the Health Organization of the League of Nations, at the National Institute for Medical Research, Hampstead, and are distributed therefrom to national control centres established in other countries for local distribution to laboratories, institutes, and research workers; and to workers in other countries in which the establishment of national control centres has not yet been completed.

With regard to the supply of these new standards to those requiring them in the United Kingdom, applications should be made to the Department of Biological Standards, the National Institute for Medical Research, Hampstead, N.W.3.

Reports of Societies

TREATMENT OF WAR FRACTURES BY THE CLOSED METHOD

At a meeting of the Section of Surgery of the Royal Society of Medicine on November 22, Mr. V. Zachary Cope presiding, Dr. J. Trueta of Barcelona read a paper on the treatment of war fractures by the closed method. The paper is printed in this week's issue of the *Journal* at page 1073.

In calling for discussion on the paper the President described Dr. Trueta's contribution as a momentous one, bidding fair to revolutionize one of the most difficult problems that faced surgery, especially during war. One of Dr. Trueta's remarks linked itself in his mind with a finding by Lord Lister. Dr. Trueta had said that the limit of time which might be allowed to elapse between the production of the wound and the operation if infection of the wound was to be avoided was from four to eight hours. In Lister's original paper on the treatment of compound open wounds and fractures he stated that if after six hours the antiseptic treatment were applied it was not uniformly successful in its effect; if applied before that time its effect was more certain.

Dr. A. D. Wall, who had recently returned from China, said that in the war which enveloped Shanghai in 1937 he tried out the plaster immobilization method which Dr. Trueta had used in Spain, and obtained exactly the same quality of results. He could confirm everything that Dr. Trueta had said about that method. With regard to the contention that it might not work on the soil of France in view of the greater possibility of gas gangrene, there was no more heavily manured soil than that of the Yangtze delta on which Shanghai stood. Although not much gas gangrene had been experienced in the hostilities around Shanghai, there had been cases, especially in what he described as the gunshot wounds of civil practice—that is, conflicts between police and gangsters.

Dr. Leonard Colebrook said that in considering Dr. Trueta's most interesting work he could not help wondering whether one of the essential pieces of evidence had not been omitted. At all events he had been disappointed not to learn whether in actual fact haemolytic streptococci were present in the wounds which were encased in plaster. A great deal had been said about gas gangrene, but in the great war the haemolytic streptococcus was a far more important enemy than the gas-gangrene organism. He thought it was true to say, although it was not generally recognized, that 80 or 90 per cent. of all open wounds in the British base hospitals in the last war were infected by haemolytic streptococci, and an enormous number of deaths were due to such infection. It would therefore be of interest to learn whether these organisms were present in the Spanish cases which had been treated under plaster. He thought it was the experience of the last war that if the haemolytic streptococcus was not present the wounds could take care of themselves, whether sutured or not sutured. If, on the other hand, the haemolytic streptococcus was present many troubles occurred, such as cellulitis and septicaemia, and not infrequently death resulted. (Dr. Trueta interposed to say that in the 1,073 cases referred to in his paper there had been six deaths from septicaemia.) Dr. Colebrook added that he had gathered from Dr. Trueta's book that when failures occurred they were due to deficient drainage. He wondered whether these were actually cases in which there were haemolytic streptococci. But apparently little pathological investigation had been done in Spain.

Dr. Trueta replied that in the cases at his clinic all types of the streptococcus and all types of the staphylococcus had been found. He believed that it was only the character of the treatment carried out which prevented complications. It had been noticed that when the plaster was changed a slight rise of temperature, some pain and local infection occurred, lasting for one or two days. The immobilization of the soft tissues together with the antiseptic treatment was the reason why the complications were so few.

Dr. C. A. R. SCHULENBERG referred to the disagreeable smell caused by the saturation of the plaster with the discharges of the wound. This might seem a small disadvantage, but it had to be remembered that, whereas the doctor saw the patient only for a few moments, his fellow patients and the nursing staff were continually in his proximity, and, having to endure the smell day and night, became rebellious, so that the plaster had to be changed prematurely. He wondered whether Dr. Trueta had tried any local measures of combating the smell, and if so with what result.

Dr. TRUETA said that in a certain number of cases yeast obtained from breweries was employed locally on the wound, and when this was done the smell was not so pronounced. A certain smell did remain, but it was less disagreeable, the local fermentation of the yeast requiring the products of disintegration of the tissues, so that a cleaner wound resulted. The technique did not interfere with the excellence of the result in other respects. It had been employed in only a few cases, however, because the problem in the latter part of the Spanish war was to obtain the yeast.

Mr. G. GORDON-TAYLOR paid a tribute to Dr. Trueta's paper, which was novel and might almost be said to be iconoclastic. But methods of surgery changed, and what had been brought forward that day was eloquent proof of the methods which Professor Trueta had championed. It might be that in the days to come these methods of excision and immobilization in plaster would prove to have been the methods of election in the war which began in 1939.

Mr. W. C. GISSANE said that he had followed this treatment in dealing with civilian injuries. On changing the plaster in those patients who had sustained gross muscular and bone injury it was extremely difficult to hold the original reduction of the fracture. If it was held by traction he found that the fragments became distracted. Had any method of overcoming that difficulty been found?

Dr. TRUETA said that the necessity for changing the plaster generally depended on the bad smell, and if there were means of ameliorating the smell it should be possible to retain the first plaster to the end. In the absence of any clinical necessity for a change the first plaster was retained longer than subsequent ones, generally for six weeks. But sometimes it was desirable to change the plaster after ten or twelve days in order to obtain a better reduction than had been possible, owing to the danger of severe infection, in the first instance. This reduction should always take place under *x*-ray control.

Finally, in reply to a question by Lieutenant-Colonel D. C. MONRO, who asked whether any idea could be given as to the weight of the plaster used by a surgical team in the average day, Dr. TRUETA said that the difficulty was to give an average day in the Spanish war. On March 17, 1936, for example, at his own hospital 200 plaster cases were dealt with in the twenty-four hours. Perhaps on a busy day as much as 600 lb. or 700 lb. of plaster might be used.

FOOTGEAR AND COMMON SENSE

In his presidential address to the Section of Physical Medicine of the Royal Society of Medicine on November 17 Dr. JAMES MENNELL took the subject of footgear, dealing only with the normal foot. He announced that the subject of foot hygiene is to be a general theme of the Section meetings during the year, and that foot abnormalities will be considered on the next occasion. His demonstration was assisted by a lady model and accompanied by an assemblage of an extraordinary number of types of shoes.

Dr. Mennell began by referring to the very general ignorance on this subject. On one occasion he was present at a meeting of medical men when footgear was discussed, and yet although those attending were accustomed to prescribe for the feet, a question revealed the fact that they did not know what was meant by "size" as the term was specifically used by shoemakers. Dr. Mennell was informed that the problem of clothing the feet in the case of the evacuated children was proving to be far more difficult than that of clothing their bodies, and this was not remarkable because as a last resort one could wrap their bodies in newspaper with something underneath, but no material as amenable as paper had yet been discovered for the feet.

Scientifically the human foot with its marvels of design did not include one pattern for men and another for women. Indeed, the only bone in the foot which could be distinguished anatomically as belonging to a male or to a female was the astragalus, and even there a micrometer screw was necessary to detect the difference. There should in practice be no difference between shoes for the two sexes; if there was a difference it was because we were the slaves of fashion and of the shoemaker. Yet in the ladies' department of a boot shop would be found relatively high heels and pointed toes, and in the gentlemen's relatively low heels and square toes. For children there was a reversion to the low-heeled, square-toed build of shoe, but of a somewhat different type.

The Sole of the Shoe

Dealing first with the sole of the shoe, Dr. Mennell said that there would be few to deny that the general contour of any shoe, to be accurate, should be roughly triangular as seen from above, the angle of the heel being somewhat rounded. The variation in shape in manufactured shoes could easily be tested by placing a straight line from the centre of the heel to the toe of the shoe, running along the middle of the waist. In the normal foot this line usually passed through the space between the second and the middle toes, but in many shoes the design was such that this line passed much too obliquely on the one side or the other, which meant that there must be a forcible strain on the joints of the fore part of the foot, tending to swing it away from the side which had the pressure. He illustrated from commercial examples how very varied was the line on which shoes were built. Another point often forgotten was that the measurement of the foot standing as well as sitting was essential in estimating the length of shoe required. The laws of physics applied to the fitting of a shoe as much as to other matters. When the sole was lifted from the ground it assumed a curve, and to accommodate the foot for standing and for walking it was necessary to allow two shoe "sizes" beyond the limit of the actual foot measurement. What happened to the front of the shoe once this essential space had been safeguarded was a matter of indifference. It was immaterial to what degree the further pointing of the toe took place. Any shape was permissible provided always that the inner side of the shoe did not begin to slope towards the point until the front of the big toe was reached. There should be no quarrel between the human foot and the pointed toe if that condition was fulfilled. The important thing was where the sloping towards the point began. Shoemakers often sloped away too early, with the result that on one side there was compression of the hallux while on the other there was no room for the little toe to slide forward.

High Heels

Turning to the vexed problem of the high heel, Dr. Mennell said that there was but one consideration on which the solution of this problem depended. The point in question was the elasticity of the calf muscles. When the head of the first metatarsal was separated from the internal malleolus and the distance between them increased, strain was caused on the flexor longus hallucis, and the victim had hallux rigidus. It was the tension here which probably set off the train of impulses that led to the increase of the formation of the arc on standing when propulsive effort was required. The high heel—certainly up to 2¼ in.—was not of necessity to be condemned, whereas the low heel of 1/2 to 3/4 in. on the men's side might be as baneful for some men as a heel of 3 in. or more for some women. There were many men who would never walk in comfort with less than a 2¼-in. heel, and many women who would never walk in comfort—at least without some very special form of footgear—unless they had only a half-inch heel or no heel at all, particularly those who suffered from hallux rigidus. The low heel might be most pernicious even for a man. Pseudo-intermittent claudication arose from one cause only—the wearing of too low a heel. He did not want to be taken as an advocate of the extravagantly high heel, and he could not honestly say that any human foot, unless extraordinarily abnormal, required a heel of more than 3 in. in height. The sufficiency of the tendo Achillis alone should control this problem, and on this depended that of the flexor longus hallucis. He demonstrated the technique of the wedging of a heel, and added that the wedging of a sole was fallacious unless all hope of restoring mobility was abandoned. A final word on this subject was with regard to the set of the heel, and here he criticized the custom of being measured for a fitting while seated in a shop chair. The fact was ignored that when weight came on the foot the foot would shoot forward for at least one "size," perhaps for one and a half "sizes." This slip forward was overlooked, and no allowance was made for the two shoe "sizes" beyond the actual foot measurement, with consequent cramping.

The "Upper"

With regard to the "upper," he said that reliance should not be placed on the length measurement given on the boxes in the ladies' department. If a "5" shoe was requested it was as likely as not to be found on measurement to be a "7." In men's shoes there was less disparity in this respect. The shape of the upper varied greatly according to different lasts. He emphasized the importance of depth under the toe-cap and over the outside. It was customary to slope the front part of the shoe down gradually over a considerable distance, but if this were done it must reduce the amount of room available in the fore part, over the big toe. It was necessary to have something to keep the heel back in the heel of the shoe. This position must be properly controlled by straps, laces, or other contrivances. Two straps, preferably buckles, were the minimum; one strap would not serve. In children especially it was necessary to have a definite grip to prevent the foot from slipping forward into the front of the shoe, which was just as bad as wearing a shoe that was too short. The placing of a pad of felt underneath the tongue of the shoe should reduce materially the whole instep measurement and so enable walking to take place with freedom without the foot running forward into the front part of the shoe. Inequality of length of the two feet was another problem, and it was often difficult to persuade boot shops to sell a pair of shoes having different sizes for the right and the left.

Dr. Mennell concluded by saying that, save in the case of the victims of some congenital abnormality or gross disease or injury, a painless or perfect foot should be regarded as the human heritage. Of this heritage we had been deprived by our footgear and nothing else, and that was a reflection on the lack of co-operation between shoe manufacturers and the medical profession. The extent of the evil could be gauged by the thriving businesses of the chiropodists, much of whose work should not be necessary if people were properly shod. Our foolishness in subjecting the marvellous mechanism of the human foot to the tyranny of fashion caused intense suffering, was fatal to the maintenance of correct posture, and was a fruitful source of irritability and bad temper.

At the October meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland Professor L. ABRAHAMSON read his presidential address on "Pericarditis." He dealt with a series of twenty-four cases, treated in the Richmond and Whitworth Hospitals. Thirteen of the cases were clearly and ten were probably of rheumatic origin. Four were tuberculous, one septic; one, associated with anaemia, enlargement of the liver and spleen, remained obscure in spite of necropsy. In ten cases the condition followed pregnancy in patients with antecedent rheumatic heart disease and was probably due to hydropericardium rather than to a fresh attack of rheumatic infection. In the remaining case there was a congestive hydropericardium. Post-mortem examination had been carried out in seven cases, and in each was confirmatory.

Local News

SOUTH AFRICA

Medical Research in South Africa

The report of the South African Institute for Medical Research, Johannesburg, for the year to December 31, 1938, was prepared by the late Sir Spencer Lister, who was Director of the Institute from 1926 until his sudden death in the library there last September. It contains a further account of the investigation into the aetiology and therapeutics of pulmonary diseases in South Africa, including a note on the benefits resulting from prophylactic inoculation against pneumonia in cases which are later treated with 2-(*p*-amino-benzene-sulphonamido)-pyridine, confirming the work of Fleming in London. An unduly high disease incidence and death rate in one district variously ascribed to pneumonia and heat stroke proved on investigation to be due to African relapsing fever. The outbreak was terminated by anti-tick and disinfection measures in the compound housing native labourers, and no fresh cases occurred subsequently. This was the first recorded instance of an extensive outbreak of this infection in South Africa, only occasional sporadic cases having been reported previously. Research was continued into the anti-scorbutic value of kaffir beer, which ought to be regarded, the report states, as a food rather than as an alcoholic drink, since it contains appreciable quantities of anti-scorbutic and other vitamins which are absent from the native diet. It is urged that until present customs have altered, the standard of agriculture has been improved, and other protective foodstuffs have been made available and popularized, kaffir beer should be accepted as, on the whole, a beneficial form of food for the rural population. No one special factor has been detected to explain the frequent occurrence of primary liver cancer in natives of the South African Union and the Portuguese Colonies. Some reason was found for the assumption that in the majority of cases of spontaneous human cancer malignancy was preceded by a definite pre-cancer stage, the diagnosis of which might be difficult, the worst cases being those in which such a stage was absent. The pre-cancer stage was thought to indicate an attempt to combat the cancer-producing factor, and it seemed that with a greater tissue liability to cancer or a more powerful cancerogenic influence went a shorter and less pronounced pre-cancerous period. In the majority of "industrial cancers" there was a longer pre-cancerous period, especially when there was no constitutional or hereditary factor. Work was continued at the Institute on the entomology of malaria, and it was indicated that the half-mile drainage control area was inadequate in South Africa. A survey was started of plague-bearing fleas, and it is pointed out that too little interest has been previously taken in insects of medical significance in South Africa—a country in which the major diseases are insect-borne.

AUSTRALIA

Rural Hospital Management in Victoria

The 28th annual report of the Victorian Bush Nursing Association reveals the great variety of medical institutional work which was carried on successfully in 1938–9 in the State of Victoria, comprising local as well as district nursing relief, and including work in hospitals as well as among isolated communities in the bush regions. The Bush Nursing Association is essentially a co-operative concern, each centre managing its own affairs; in the case of the bush nursing hospitals the visiting medical practitioners are *ex officio* members of the committee of management, the function of the central council being limited to providing the staff and to calling the attention of the local committee to any circumstances which seem to require investigation. The Bush Nursing Association does not ask any district to adopt its system nor does it publish any propaganda, but gives its support when a wish to form a centre is expressed by the local residents and medical practitioners, all such centres being independent and self-supporting. There are in existence fifty-one hospitals, while three more are being built and organized. There are nineteen bush nursing centres also. The central council remarks that few city dwellers realize the desire of people of independent mind to provide in their own districts modern and well-equipped hospitals, owned and managed by themselves, staffed by their own doctors and by the best nurses in the State, and provided at very low rates. Hospital extensions are often found necessary after their first building by reason of the enthusiasm which results; some have had some financial difficulties in carrying on, but in most cases they are all paying their way without help from outside. Had the co-operative system of nursing in the bush not been developed originally, it is doubtful whether the system could have been transferred later to the rural hospital centres. The local inhabitants regard their subscriptions as a form of insurance; one hospital closed its doors five years ago to non-subscribers and is thoroughly satisfied with the result, so much so that a second hospital has followed this example. A few hospitals have been forced to close by shortage of medical practitioners; if more practitioners were available the number of hospitals could be much increased. Bush nursing hospitals may not be established within twenty miles of the nearest city. A fundamental feature of these hospitals is that they take cognizance of persons before they become definitely ill. The rate charged for care in hospital depends on the number of subscribers; if there are 100 to 150 subscribers the charge can be lowered to about £2 a week, and if there are enough subscribers it falls to 10s. a week. Non-subscribers are charged full business rates of £5 5s. or more. The council's report adds that the association is not to be considered as a charity but as a co-operative movement, the public hospitals remaining available for those in necessitous circumstances, but it is open for anyone to secure the admission of such cases to a bush nursing hospital by paying for them.

ENGLAND AND WALES

Bristol's New Red Cross Centre

On November 18 Queen Mary paid a surprise visit to Bristol to open the British Red Cross Society's new Bristol headquarters and Regional Hospital Supply Depot in Lewin's Mead. During a tour of inspection her Majesty showed keen interest in the various branches of the work of the depot and spent a considerable time in the workshop and in the hospital library. Among those who received Queen Mary at the entrance to the centre were Professor J. A. Nixon and Dr. L. E. Claremont; and Dr. R. H. Parry, medical officer of health for Bristol, with other leading workers, was presented to her by the Lord Mayor, who in a speech of welcome referred to her Majesty's interest in the work of the British Red Cross Society. An explanation of the activities being carried out at the centre was given by the County Director, Alderman F. Sheppard. Working parties, he said, had been formed throughout the five neighbouring counties, where ladies gave their services. "Another branch of the service which is doing a very fine work indeed is the V.A.D. and the Red Cross detachments. The total personnel in Bristol is ninety-four men and 382 women. Work in this connexion has been carried on in peace times, and therefore a large number of fully trained personnel is available to undertake duties with the Forces or for home service. The Red Cross, too, is working in connexion with the authorities in training men and women for casualty and anti-gas duties. An A.R.P. Reserve of 370 men and 900 women has already been trained, and more volunteers are still required. Over 2,000 volunteers, in addition, have been trained for the casualty services." The Regional Supply Officer (Lady Wraxall) said that the Bristol Centre was formed primarily to co-ordinate the work of the British Red Cross Society, the Order of St. John of Jerusalem, and the women's voluntary services. At the opening ceremony her Majesty named the centre "Queen Mary House."

Cost of Croydon Typhoid Epidemic

The Croydon Borough Council is applying to the Ministry of Health for sanction to borrow £92,169 for the purpose of meeting expenses in connexion with the typhoid outbreak of 1937. The number of claims settled up to the present is 260, of which 28 are in respect of fatal cases. The loan is intended to include the sum of £4,768, being damages and plaintiff's taxed costs in the case of Read *v.* Croydon Corporation. In this case, which was taken as a test, Mr. Alfred Read of South Croydon brought a claim on behalf of his daughter, who became ill during the epidemic. After a nine-days hearing the child was awarded £100 damages and the father was awarded agreed out-of-pocket expenses. Mr. Justice Stable held that the duty of the Corporation was statutory and that there was not a contract between them and the ratepayer; further, that the obligation to provide pure water to the occupant of a dwelling-house was not absolute but was an obligation to exercise all reasonable care and skill to secure its purity, and this duty the Corporation had not performed. The damages and costs paid in other cases amount to £87,401, and this will be covered, together with the Read damages, by the sum it is proposed to borrow. From a statement issued by the Finance Committee of the Corporation it appears that the costs of the public inquiry, which was held in December, 1937, and January, 1938, amounted to £7,728. This sum, together with the Corporation's costs in the lawsuit, amounting to £5,055, other legal costs to the amount of £1,096, and costs for convalescent treatment and sundry expenses amounting to £460, have been charged to the general rate and the waterworks revenue accounts. Recently it was proposed by the Metropolitan Water Board to seek power to acquire the Croydon water undertaking, but now, in view of the altered conditions brought about by the war, the Board has decided that the negotiations for the transfer shall be suspended *sine die.*

Low Death Rates in Sheffield

The health of Sheffield, as shown in the annual report of its medical officer, Dr. John Rennie, is improving rapidly. The general death rate and the infant and maternal mortality rates were all lower in 1938 than for England and Wales as a whole. Up to the end of the last war the mortality rates of Sheffield were always above the national average; since 1921 the position has been reversed. The mortality from infectious diseases, apart from diphtheria, was low, and even for diphtheria the rate was lower than for England and Wales. Deaths from infantile diarrhoea and enteritis were only 1.96 per 1,000 births, as compared with a national rate of 5.5, the mortality being lower in Sheffield than in any other of the large towns except Bristol and Plymouth. Influenza, too, took a relatively small toll in Sheffield last year, only four of the large towns of England having a better record, and even cancer mortality over a series of years has been almost consistently lower in Sheffield than the national figures. The mortality from tuberculosis in 1938 was the lowest ever recorded in the city. The death rate of 581 per million is not much more than half what it was ten years ago; only one other among the eighteen large towns has a lower figure—namely, Croydon, and Croydon is hardly to be ranked with the great industrial centres. Tuberculosis mortality among grinders and cutlers, who at the last census numbered some 8,000, is, however, several times higher than among the general population. Sheffield is proud of its low infant mortality—50 per 1,000 births, as compared with 53 for the whole country. Only fifteen years ago this rate was 90 in Sheffield, as compared with a national rate of 69. The two outstanding problems in Sheffield are slum clearance and smoke abatement. A large part of the report deals with the considerable work of the city council on slum clearance and the rehousing of the people. But the pall of smoke remains as thick as ever over the city; at one collecting station the amount of solid matter deposited during 1938 was equal to 369 tons per square mile.

Correspondence

Treatment of Gas Gangrene

Sir,—Dr. Ivens-Knowles ends her valuable letter (November 25, p. 1058) on gas gangrene with (1) a "strong protest" against Dr. Trueta's plaster-of-Paris treatment and (2) a brief crack at the Thomas bed splint. Her criticisms should be directed not to the method or the splint but to their faulty use! Indeed, it cannot be too widely recognized and clearly understood that neither Trueta's method nor Thomas's splint is fool-proof. Advocacy of a special technique only too often means that it is widely applied but imperfectly understood. It will be disastrous if Tom, Dick, and Harry apply closed plaster to war wounds, but not in Trueta's way! So, too, have many patients suffered miseries from the ring of a Thomas splint improperly used. Yet Thomas devised his splint *in order to avoid* any constriction, and Trueta is equally insistent on the fundamental principle of ensuring unrestricted circulation in the part. Trueta's plaster supplies to the naked deep tissues of the saucerized wound that support which is ordinarily given by deep fascia and intermuscular fascial planes—a polite and gentle pressure, nothing more.

The proof of the physiological character of this degree of circumferential support is provided by the restoration of the natural colour, activity, and comfort of the hand or foot, with the disappearance of any pre-existing oedema. The patient soon shows in his expression that he appreciates this restful and comfortable support of his wounded soft tissues. The ensurance of free circulation to the enclosed part is the paradox of the true Trueta method—*you shut it up to set it free!*—I am, etc.,

Headington, Oxford, Nov. 26. G. R. Girdlestone.

Psychological Casualties in War

Sir,—In your issue of November 4 (p. 925) you kindly inserted a letter from me calling attention to the fact that men were being enlisted who were likely to have a nervous breakdown early in their military career. There have been four letters published—two in your contemporary's and two in your own *Journal*. I have received twenty letters, and I have had several conversations with doctors in a position to know the facts. I have also heard of some old patients of my own whose laboriously acquired stability has been broken down by a few weeks of service. I think therefore that there is a problem. A chairman of a board wrote to the *Lancet* to ask if I could tell him how to recognize these patients in a few minutes. I do not think that anyone could tell him how to do that. He says that examiner No. 1 has six and a half minutes to test the vision, to examine the nervous system, and to take a complete medical history. As there were still eighteen and a half minutes left distributed among other members of the board for the rest of the body I feel that No. 1 has a grievance.

It is not always easy to get a good psychiatric history in a single interview no matter how long it is. Your genuine neurotic is not always a person who is expansive at the first interview. He is not always a person who will buttonhole all and sundry about his health. There are such, but there are also many who are ashamed of their neurosis, who will try to conceal it, who will not own up till they really get to know the doctor. This kind will certainly not tell their troubles to a board. The difficulty should, however, be got over without much trouble. Every person in this country has a doctor. It would be very easy to arrange that every recruit should bring a short note from him. This would say that the person was never ill, or that he was always falling ill, or something in between. The doctor who has had someone on his list for years might surely be trusted in this matter. He is the one person who really knows the history. Unfortunately the patient whose case stimulated me to begin this correspondence brought such a report from his doctor, but it was ignored; and I have been told of others. The admission of unsuitable persons is not, however, merely a question of the neuroses. In a hospital which I visited lately there are patients returned from France with grave organic diseases such as general paralysis and disseminated sclerosis, in addition to several cases of severe neuroses and even psychoses. It is true that these were reservists who had been called up, and therefore the responsibility does not rest with the boards. It would seem that the investigation into these cases also had not been searching enough.

As a practical attempt to meet these difficulties I would make three proposals. (1) Real histories could be got without difficulty. (2) It might be a good thing if hospital physicians were chairmen of the boards. There are many of these in cold storage. From their long experience in out-patients they have acquired special facility in spotting quickly the people who are likely to have something wrong, the people who should be set aside for further consideration. (3) For some of these a specialist assessor should be available—psychiatrist, aurist, neurologist.

I should like to call special attention to Dr. Culpin's letter, which shows conclusively what a large proportion of patients who broke down might have been spotted beforehand had a psychiatric specialist been available. I think that the same would hold good for early physical cases.—I am, etc.,

London, S.W.1, Nov. 27. T. A. Ross.

Psychological Treatment Centres

Sir,—The polemics of your correspondent Dr. Allan Macdougall, in your issue of November 18 (p. 1020), resemble Hitlerian propaganda. The assertions made are so roundly extravagant as to stupefy opposition; the more so as they contain sometimes an ingredient of fact. In my previous letter I refrained from setting forth the principal arguments for believing that mental illness in general was probably less during the last war than in peace time, as to do so would have meant exceeding the permissible limits of a letter; but the Nestor of English psychiatry, Dr. Weatherly, in your columns of November 18, has stated some of the reasons very succinctly from his own observation; and these will do as an example.

There is little evidence for Dr. Macdougall's contention that "a very large proportion of the psychic [*sic*] casualties of the last war, both civilian and Service, did not become notifiable until some years after the war." Had this been true there should have been as part of the evidence a notable advance in the annual rate of increase in admissions to mental hospitals in the years following the last war, but there was no such advance. Moreover, those who examined Service patients remaining in mental hospitals after the war usually concluded that they would sooner or later have been admitted there even without a war. Nor is it "axiomatic" that any period of great national stress produces more psychoses and neuroses. There is a well-known observation of Bonhoeffer's on 6,000 Serbian prisoners in the last war, who had been subjected to greater and more prolonged privation and hardship than almost any other body of people in those years, that while physical debility and deterioration were very pronounced mental disease was almost unknown among them. As for any considerable post-war increase in psychoneuroses, the only figures available of a general kind are those of Dr. J. L. Halliday (published in your columns). They do not refer to the immediate post-war period, and their significance depends on peace-time factors. I am happy, however, to find myself in agreement on one point—namely, that the change from war to peace may be more devastating to some individuals than a change in the reverse direction; for peace presents problems often more complicated and to some natures more distasteful than those of war. But it is not war itself that produces such conditions. They are not the consequences but, at most, the sequels of war.

I repeat that a wide advertising of the supposed inevitability of increase in mental and nervous breakdown from war conditions among the civilian population does more harm than good. On the precedent of the last war it does not correspond to the facts, although we must never forget that the civilian population is likely to be subjected to dangers far exceeding those of 1914–18. It is not the great dangers of life, shared in common, that mainly produce mental illness. It is far more often the private and sometimes petty distresses that are effective in this way, and then it is the psychoneurotic rather than the psychotic type that is engendered. Nevertheless, few people are neurotic in the face of inevitable death; many become so from disappointments in their careers or in unhappy marriages. No psychiatrist will agree that "any of us is capable of being psychotic." Predisposition, not necessarily inherited, is of fundamental importance in most cases. Dr. Macdougall exhorts us to "think of confinement in a mediaeval dungeon." I am not sure why, but may I quote a clinical observation of Oliver Goldsmith's in this connexion:

"I remember to have once seen a slave in a fortification in Flanders who appeared no way touched with his situation. He was maimed, deformed, and chained; obliged to toil from the appearance of day till nightfall, and condemned to this for life; yet, with all these circumstances of apparent wretchedness, he sang, would have danced but that he wanted a leg, and appeared the merriest, happiest man of all the garrison. What a practical philosopher was here! A happy constitution supplied philosophy, and though seemingly destitute of wisdom, he was really wise."—I am, etc.,

Nov. 24. R. D. GILLESPIE.

SIR,—Sir Farquhar Buzzard, at the special clinical and scientific meeting of the British Medical Association (April, 1919), reviewing the medical experience of the last war, called attention to the fact that

> "the large numbers of victims of functional nervous disorders resulting from the war . . . *had stimulated an intelligent interest in the question not only in the medical but in the public mind* [my italics], and it had forced a Government Department to take cognizance of its existence and to make provision for adequate treatment. . . . The war had taught us that when recognized in their earliest stages these disorders were easily cured—but not by tonics. The fatigue factor must be met by rest, the anxiety factor by psychotherapy. . . . There was no adequate provision for the treatment of patients suffering from these disorders who had limited means. They haunted our hospitals and our consulting rooms crying for help which we were powerless to give. . . . Sooner or later the provision of treatment for such persons must be undertaken by the voluntary hospitals or the Ministry of Health. . . . The Ministry would have two duties in relation to this problem—preventive and remedial."

Such conclusive testimony amply supports my plea (*Journal*, October 7, p. 743) and the axiom of Dr. Allan A. Macdougall (November 18, p. 1020); it should also resolve the doubts of Dr. R. D. Gillespie (November 4, p. 926), who had never heard of any data which purported to show a rise in psychoneurotic and minor psychotic illness during the years 1914–18, and feared a national hypochondriasis from the public becoming too interested in their mental health.

Hypochondria cannot be created here or now because already, as our philosopher Berkeley observed as far back as the seventeenth century, "hypochondria *is* the melancholy complexion of us islanders." Sir Farquhar Buzzard warned us in 1919, and Sir Walter Langdon-Brown, another Regius Professor, in 1939 (October 14, p. 783). Are we to wait another twenty years for "psychological treatment centres"?—I am, etc.,

London, E.17, Nov. 17. A. C. D. TELFER.

Anaesthesia in War Time

SIR,—At the risk of being thought reactionary may I put in a plea for the use of chloroform as the anaesthetic of choice for emergencies. It requires no elaborate apparatus and can be used in any kind of climate and for patients of any age. Induction is easy and not unpleasant to the patient, and is not followed by so much nausea and sickness as ether; moreover it does not have an irritating effect on the lungs.

As regards toxicity, are the number of fatalities from anaesthetics less than they used to be when the present complicated apparatuses were undreamt of? In my humble opinion too much reliance is now placed on the various mechanical aids to anaesthesia. Is the student taught to rely on the patient's colour, state of the pupil, lid and conjunctival reflexes, respiration, and pulse? If he does so then there is no more danger in chloroform than in any other anaesthetic.

I was brought up on A.C.E. and ether, and when a resident was fond of giving ether with a Clover. On going to India I found that chloroform given with a Junker was the universal anaesthetic. Ether is unsuitable in the Punjab in the hot weather owing to its rapid volatilization; also rubber articles perish very rapidly in the dry heat. I may say that during twenty-five years' service and many thousands of operations I have seen only two deaths from chloroform. One was delayed chloroform poisoning in a young girl who had been under anaesthesia for three hours and died the next day; the other was sudden heart failure in a young boy before the operation had started. I am quite sure that other I.M.S. officers will bear out my statement that chloroform is both an efficient and a safe anaesthetic.

During the last war in a field ambulance, a hospital ship, and in base hospitals, in which I was surgical specialist, we used nothing but chloroform. In the hospital ship and the base hospitals the Vernon Harcourt apparatus was employed, but in the field the Junker apparatus was used. It is so simple and takes up so little room that I do not see why it should not be generally employed. If any stimulation seems to be required, a little ether on a mask can always be given.

The only cases in my civil hospitals which were not anaesthetized with chloroform were those of rectal trouble, piles, fistulae, and so forth, in which spinal anaesthesia was used so as to obtain full relaxation of the sphincter ani.—I am, etc.,

H. C. KEATES,
Lieutenant-Colonel I.M.S. (ret.).

Streatham Park, S.W.16, Nov. 26.

SIR,—In reply to Dr. W. Hamilton's letter (November 25, p. 1058) with regard to statistics of deaths under anaesthetics, we do not yet appear to have arrived at any method of recording mortality figures that is not fallacious, chiefly because the figures are small and the recording is made with varying degrees of accuracy. The skill and experience of the anaesthetist, the methods of administration that were employed, the condition of the patient, the nature of the operation, and how long the anaesthesia lasted are only a few of the details required that are often not mentioned but which are necessary if we are to discover the actual cause of death and be able to classify it. The patient's state of health and the technique employed are most important in drawing conclusions on the actual part played by this or that anaesthetic before attributing a death to its employment. A study of books on anaesthesia reveals much repetition of statements and opinions, and both chloroform and ether, especially the former, have been too much condemned on insufficient premises.—I am, etc.,

Edinburgh, Nov. 25. G. D. G.

X-ray Examination of Militiamen

SIR,—The letters of Dr. A. Robinson Thomas (November 4, p. 928) and of Dr. L. Banszky (November 18, p. 1020) call for a reply, since they give a misleading view of the argument I intended to bring forward in my letter in the *Journal* of October 7 (p. 745). Let me therefore state emphatically that I believe radiological examination of the chest of militiamen to be indispensable. Our allies, the French, have practised routine radiological examination in the Army for several years, and it has been adopted in Belgium, Switzerland, and Germany. The world literature on the findings of routine radiological examinations of the apparently healthy (including students, nurses, industrial employees, and whole communities in America, Scandinavia, Holland, etc.) is now extensive. But both the personnel and the technique (including apparatus) must be such that we obtain the most benefit from the procedure—detection of unsuspected cases of active phthisis—and also avoid harm from it by labelling healthy recruits as tuberculous.

Everyone will agree that a radiograph obtained with a first-class apparatus is the best technique available. Whether screening is as satisfactory (apart from the fact that it does not provide a permanent record) will depend on the type of apparatus, the experience of the examiner, his adequate adaptation to darkness, the time at his disposal, the type of material (for example, thin women or very muscular men), and the duration of each screening session. (Holm in Denmark, in a reliable comparative study undertaken several years ago, found that the occasional case missed by screening and detected by means of a radiograph was always a student screened towards the end of a session when the examiner was getting tired.) Screening has the advantage in that the interpreter faces the patient and can if necessary put questions that may help in a doubtful case. Miniature screen photography enables a very small photograph of the screened image to be obtained which can be examined at leisure with a magnifying lens or be thrown on a screen. Much time is saved at the moment of *x*-raying, but it is difficult to see how the negative can improve on the actual screened image; indeed, the help obtained from studying the movements of the diaphragm and the relative lighting up of the apices on inspiration is lost.

Granted that routine radiography, with further investigation of suspicious cases, is the most reliable method available, the cost per person, including film, personnel, etc., works out, I believe, at a little over 5s., but no doubt in dealing with very large numbers the cost could be reduced.

As regards who should interpret the films or do the screening, I still maintain that the best person is a tuberculosis physician with the necessary radiological experience or a radiologist with special experience in chest radiology.

The large numbers of patients who have been and are still being sent to sanatoria because of misinterpretation of apical shadows, normal hilar shadows, heavy lung markings, healed primary complexes, often in radiographs of very poor quality, give ample support to the view that availability, choice, or training (if necessary) of personnel is a matter that should at any rate be considered before we insist that the military authorities adopt a method that may result in our being hoisted by our own petard.—I am, etc.,

Staines, Nov. 19. G. Gregory Kayne.

Sir,—I should like to join in your discussion about the *x*-ray examination of militiamen.

First let me tell a story. A short while ago a child of 15 months died in Redhill County Hospital of miliary tuberculosis, and last week the other members of its household were brought by one of my health visitors to the clinic for examination. They were all screened, and one was found to have an azygos vein lobe, and another, a young man of 21, was found to have two large cavities in the left lung with commencing infiltration in the right lung. These observations were confirmed by *x*-ray film. The young man had recently been before an Army medical board, having passed Grade 1, fit for military service anywhere. Whether he had the physical signs of disease I do not know, but it is certain that his condition was overlooked, and should he have at length joined the Army he would have infected many of his fellow soldiers, some of whom would have died of the disease and some become pensioners.

The moral of the story is that ordinary examination failed to demonstrate what was obvious on the screen at a glance, and it seems to me very wrong that the Army doctors are not allowed the facilities of this method of examination. It may be that if only screening is used a few lightly infected cases will slip by unobserved, though, for myself, I think one gains more information by screening than by filming, the only disadvantage being that one has no permanent record; at all events the heavily infected and infectious cases, such as that described above, will be found. And the method is so practical; twenty-five men can be readily screened in an hour, and should any abnormality be detected a film is soon taken. It is the method adopted by the military authorities in French Colonial Africa, who, using a mobile *x*-ray set, screen all the recruits and film the doubtful ones.

No great expense need be involved: the medical board would have to move from its present rooms to the local hospital, and that is about all.—I am, etc.,

A. Stephen Hall,
Tuberculosis Officer.

Redhill County Hospital, Edgware,
Nov. 21.

The Treatment of Peptic Ulceration

Sir,—For the past twenty years I have not hesitated to express the opinion that the essential principle in the "medical" treatment of peptic ulcer is complete uncompromising confinement to bed for three to four weeks, and that severe dietetic restriction or drug therapy plays an insignificant or negligible part. Whether confinement to bed contributed to healing through physical inactivity (or even posture) or on the nervous side through seclusion from responsibilities and other psychical disturbances, or through both factors, was not perhaps a necessary decision. But I entertained a suspicion that the success of several forms of dietetic treatment, though widely differing, might be due to one factor they had in common—the protracted rest, a state often inevitable through the elaborateness of the details which must in addition have a high suggestive value.

It must be admitted—and the weakness will be condoned—that a physician to a teaching hospital is in duty bound to represent to his students that this is not the orthodox practice and to indicate to them the views held in general by eminent colleagues regarding the role of acidity in the genesis and aggravation of a peptic ulcer and the necessity to administer alkalis for its possible continuous neutralization. But control observations of patients treated solely by rest and a relatively bland diet have persuaded me that the results were at least as satisfactory as in those submitted to the orthodox elaborate regime—results judged by the complete amelioration of symptoms and subsequent radiographic examination.

It is naturally a considerable satisfaction to me to learn from the article by Dr. James Ronald in the *Journal* of November 25 (p. 1033) that he has found it impossible to correlate the variations in acid level with the symptoms and signs of ulcer; that improvement occurred whether the acidity was diminished, unaltered, or increased; that no distinction could be drawn on clinical grounds between cases in which hyperchlorhydria was or was not altered during treatment; and that, in fact, healing could take place although the hyperchlorhydria actually increased. We are entitled, therefore, to deduce from his investigations support for the belief that there is no justification for indicting acidity as the villain in the piece, and to assume that there are other factors concerned in the production of peptic ulceration, with the encouragement to divert our interest from the local lesion, upon which attention has necessarily been fixed through the exhortations to deal with the acid as the essential factor. It may be that the orthodox ground so long established will not be abandoned without a struggle, but there can be no doubt that there has for some time been a growing tendency among experienced practitioners of an inquiring and sceptical turn of mind towards this revision of treatment. And I for one cannot refrain from endorsing on purely clinical lines the conclusions derived from Dr. Ronald's more scientific investigations.—I am, etc.,

London, W.1, Nov. 25. Adolphe Abrahams.

Sources of Vitamins A and D

Sir,—In May this year Miss Anne Wilbraham and I published under the title *The Englishman's Food* a historical survey of the changes in the character of the English diet during five centuries and of the influence which these had on the health of the people. In discussing rickets we had to deal with the important part played by vitamin D, and we naturally made reference to the remarkable developments which had been brought about by the discovery of the high-potency oils, such as halibut-liver oil, and by the production of concentrated preparations. Exception has been taken to some of the statements we made in this section of the book by Mr. K. MacLennan, general manager of British

Cod Liver Oil Producers (Hull) Ltd., and as some of the points raised in correspondence between us were also mentioned in a letter from him which appeared in your issue of July 29 (p. 264) it seems appropriate that a reply should appear in the same place.

On one point his objection was certainly well founded. We stated on page 180 that "halibut-liver oil has almost displaced cod-liver oil as a means of giving vitamins A and D." At the time this was written it was my belief that such was the case. I had been led to form that opinion by consideration of the remarkable rise in the consumption of halibut-liver oil in this and other countries—a production hardly existed six years ago, yet last year something like 4,500 gallons were consumed in this country alone—by an equally impressive rise in the use of concentrates of A and D, many of them prepared from high-potency oils of the type of halibut-liver oil, by evidence that ever-increasing quantities of high-grade cod-liver oil produced in this country were used for poultry and animal feeding either here or in the U.S.A., and by the strong impression I had formed from conversations with medical men and chemists that the popularity of substitutes for cod-liver oil was growing rapidly.

What I did not then know was that a volume of oil of medicinal quality estimated by various experts at from 1,000 to 2,000 tons a year in Great Britain is still employed for human use. It would, therefore, have been more correct to have stated that halibut-liver oil and other high-potency materials have raised a serious challenge to cod-liver oil during the last few years. How serious the challenge is can be appreciated from the fact that the annual consumption of halibut-liver oil alone—leaving out of account entirely the large production of proprietary preparations rich in A and D—represents between one-half and one-third of the vitamin A and between one-quarter and one-sixth of the vitamin D contained in the annual consumption of cod-liver oil.

Exception was also taken to our giving the range of potencies of cod- and halibut-liver oils as 50–200 I.U. and 1,000–4,000 I.U. of vitamin D respectively, on the grounds that these figures understated the case for cod-liver oil and overstated that for halibut-liver oil. I have had a wide experience of testing liver oils for vitamin D potency, and I stand by those figures. I do not deny that exceptional oils are encountered from time to time, and that by selection of fish—coal fish is an example—or by judicious blending or fortification liver oils of higher D potency than the figures I have given may be obtained. What I maintain is that for authentic liver oils of the two species the figures I have given are representative.

I have also been called to task for expressing the view that a small volume of halibut-liver oil—or, for that matter, any other high-potency A and D material—will provide all that a much larger dose of cod-liver oil will supply. The statement was made in the discussion of human rickets in our book, but I am prepared to defend it in a much wider connexion.

The calories supplied by the fat in the doses of fish-liver oil taken medicinally are of no significance under conditions such as prevail to-day in Great Britain. It is another matter when starvation is rife. For this reason I had no hesitation in recommending the International Relief Commission which operated in Spain during the recent civil war to purchase cod-liver oil in preference to concentrates of A and D. At such times every calorie counts.

There was at one time a theory that the fatty acids of cod-liver oil have some peculiar nutritive virtues. It was thought that their highly unsaturated character made them more readily absorbed and assimilated than the fatty acids of the commoner edible oils and fats. This theory never had substantial foundation, and it is now entirely discredited. Even before controlled investigations had shown that the common saturated fatty acids are absorbed and oxidized in the tissues as readily as the unsaturated ones, the supporters of the "fatty acid" theory of the efficacy of cod-liver oil had been routed by the disastrous results which followed an attempt to replace cod-liver oil by the highly unsaturated linseed oil in infant feeding. Curiously enough, the fish-liver oils are actually deficient in the recognized "essential fatty acids." In only one respect do the fatty acids of cod-liver oil show peculiar properties, and that is that under certain conditions they appear to exert a curious toxic action leading to forms of muscular degeneration. There is a considerable and growing literature on this interesting subject, but it is not easy at the moment to get all the evidence into perspective.

Finally, I am of opinion that little or no importance can be attached, in discussing the nutritive value of the fish-liver oils, to the small amounts of iodine which all of them seem to contain. Many years ago an "iodine" theory of the physiological action of cod-liver oil was popular, but it, like the "fatty acid" theory, died of inanition.—I am, etc.,

Department of Biochemistry,
University College, W.C.,
Nov. 15.

J. C. Drummond.

Virtues of Brown Bread

Sir,—I was particularly interested in the letter in the *Journal* of November 18 (p. 1022) from my old school-fellow and colleague Dr. Geoffrey Taylor regarding the virtues of brown bread. It contains more than a "germ" of wisdom that those responsible for national health might well encourage, and contrasts strongly with a dispatch from France that appeared in the lay press telling of troops clamouring for white bread and of the pathetic efforts to obtain "fine quality white flour." What misplaced energy to obtain an artificial and anaemic product denuded of its natural vitamin by excessive milling! Even without great military activity, the present war has already demonstrated the great nervous tension to which the community is likely to be subjected, and it would be a wise provision to encourage the production and consumption of flour in which the health-giving properties of the natural vitamin B had been retained.

In view of the campaign for national fitness and the recent work on nutrition, would it not be possible for the B.M.A. to take a lead in this matter and persuade His Majesty's Government of the importance of preserving intact the essential factors in wheat flour instead of allowing persistent wastage through excessive milling and whitening?—I am, etc.,

London, W.2, Nov. 20. R. Cove-Smith, M.B.

Sir,—Professor Geoffrey Taylor (*Journal*, November 18, p. 1022) once again champions the virtues of brown bread over white bread on the ground of the vitamin B content of the former and its absence from the latter. Professor Taylor, however, overlooks the psychological factor that to modern taste modern white bread is far more palatable, and usually more digestible, than the brown bread as purveyed by modern bakeries.

There is the recognition among all engaged in the bakery trade that the conditions required for making very attractive brown bread differ greatly from those in use for making white bread. They are, therefore, not prepared to arrange for incurring extra expense for a portion of the community who are not prepared to pay a higher price for their loaf of brown bread. It is better to eat good white bread and obtain the vitamin B from other sources than to eat a brown bread which is unpalatable or less digestible. I would point out two excellent methods of obtaining vitamin B and at the same time preventing the curse of habitual constipation. The first is to take frumenty as a porridge two or three times a week. The second is to give your baker a few pounds of freshly crushed white wheat and instruct him to incorporate a quarter of a pound into the dough when making up each 3-lb. loaf. I should be happy to send a specimen of this attractive bread to any doctor who would like to test it.—I am, etc.,

London, W.1, Nov. 21. Josiah Oldfield.

Sir,—Dr. Geoffrey Taylor is quite right about the "virtues of brown bread," and if the Government would put a tax on white flour and let the wholemeal flour go free of tax we should not have so many anaemic and constipated children, nor have to go to the chemist to buy wheat-germ to cure complaints they ought never to have had. The bread is more nourishing and sweeter.—I am, etc.,

Bassingham, Lincoln, Nov. 24. OSBORNE JOHNSON.

Radium Treatment of Cancer

SIR,—It is reported that Sir Leonard Hill, in a paper which he read at the Royal Society of Arts on November 23, severely criticized the use of radium in the treatment of cancer, and this reminds me that in a pamphlet which was published in 1936 by Messrs. H. K. Lewis I wrote in reference to "cancer treatment by irradiations":

> "It is now established that many toxic effects may result from the use of these rays, that morbid changes may ensue, and that the lymphoid tissues and endocrine glands may be seriously affected."
>
> "It is obvious that irradiations will destroy an easily accessible growth, and so would many other physical and chemical agents, and, of course, simple surgical measures could not possibly produce any direct constitutional ill results."
>
> "As regards deeply seated growths, the use of radium or x rays, whatever the technique employed, seems to be not only useless but dangerous."
>
> "If we concede that radiations have a selective influence upon cancer cells, and if we further allow that they can be used so as not to injure overlying or surrounding parts, can we even then conceive that they will destroy not only the centrally situated cancer cells, but those spreading in all directions from the main mass? And, furthermore, can we conceive that their toxic constitutional effects will not occur or even that the peripheral cells may not be stimulated to more rapid growth?"
>
> "I have seen radium inserted into an inoperable cancerous growth . . . but the outlying parts have seemed to grow more rapidly. . . ."
>
> "I believe that this x-ray and radium treatment is unsound, unscientific, and dangerous, and that it will be totally abandoned within a few years."

—I am, etc.,

Cardiff, Nov. 24. W. MITCHELL STEVENS.

Viruses and Cancer

SIR,—In the leading article on the above subject in your issue of November 11 (p. 959) relative to Dr. C. H. Andrewes's presidential address it is stated that "any doubts of the specificity of some of the immune reactions observed would seriously imperil the conclusions which have been drawn from existing facts." Elsewhere (*Journal*, March 26, 1938, p. 698) I have expressed very considerable doubts in this regard; but it is with another aspect of the same subject which has been raised in Dr. Andrewes's address that I propose to deal here.

If the results of the immunity reactions, the carrying out of which has been undertaken by the virus-advocates in the attempt to demonstrate the existence of a causative virus in tumours, have any logical meaning, they must mean that, so far as the virus-upholders are concerned, for each and every individual case of the hundreds of possible types of tumour there exists a separate specific causative virus. What this implies in terms of Dr. Andrewes's hypothesis I refrain from discussing, largely because of a lack of desire to treat as serious the bewildering, ever-increasing tangle of makeshifts that has been and is being piled up to support a theory—that of virus causation—which has long since been shown to be quite inadequate.—I am, etc.,

Aberdeen, Nov. 18. J. P. McGOWAN.

Melted Wax in Therapeutics

SIR,—I endorse the opinions of Dr. E. Scott in your issue of October 28 (p. 885). It is a most efficient method of applying heat. It is eminently suited to general practice work for treatment of arms and legs, as one can have a large bucket of it kept handy. But it is useful for more than treating inflammation. I have used it very much for many of the aches and pains that won't label themselves. For sprains of ankles or hands it is very good to have a bucket full of the wax. I have always heated mine on the ordinary gas stove. When the wax is at the right temperature (my wax melts at 60° C., and I use it at about 65° C.) the hand or foot is quickly plunged in and taken out; when the wax on that has set, but not cooled, it is plunged in again and so on until a thick layer is obtained. Each additional layer adds heat and prevents rapid cooling. So far as heat is concerned, I fail to see the use of leaving it on for more than an hour or so; but it would probably have an effect like elastoplast if left on longer. Knees and elbows can be treated by holding over the bucket and pouring wax over the joints, using a small saucepan. When one layer has set, more is poured over it until a thick layer is obtained. Hips can be treated; so can the whole body. For this I use a sheet of lead placed on a table and folded up at the edges. The patient, with a towel round the buttocks, lies on the sheet of lead; several buckets of wax must be ready at the right temperature; then it is poured on from saucepans until the patient is enclosed in a thick layer. The temperature rises to about 101° F. or so and there is profuse sweating. The wax is always removed very easily, as it does not stick to the skin. All wax removed is used again. For hands and ankles the process is simplicity itself. The one thing is to plunge the hand or foot in and not let it move about in the wax, for that reheats the wax which has set on the part, and then the heat is severely felt. I have never had a burn. Melted wax is also excellent for cosmetic work, for it produces a very nice skin. I have used it for the face, putting an airway in the mouth. Wax combs out of the hair without trouble.

I hope that others will follow Dr. Scott's suggestion. Would it be too absurd to suggest that it ought to be a good method to use at the front?—I am, etc.,

Kingston Hill, Surrey, Nov. 15. W. F. COOPER.

Personal Hygiene in Syllabuses of Training Colleges

SIR,—May I comment on the letter of Dr. Octavia Lewin in the *Journal* of October 14 (p. 785). In connexion with certain problems of evacuation and the need for education in matters of cleanliness she states: "It is well known that personal hygiene is not on the syllabus of the training colleges." May I say that Dr. Lewin is misinformed to this extent, that hygiene has been a compulsory subject for training college students for many years! It seems to me to follow that matters of personal hygiene must of necessity be discussed with all students in the training colleges, if by personal hygiene Dr. Lewin and myself understand the same thing. I mean by the term the personal habits which maintain and preserve the health of the individual and therefore of the community. In the hygiene courses of the training colleges are discussed the fundamental necessities of health—namely, nutrition, activity, sleep, warmth, cleanliness, and light—and I submit that it is impossible to study these without including and embracing personal hygiene. I state emphatically that personal hygiene, in the sense I give to the term, is studied with seriousness in all training colleges, with enthusiasm in many, and that it is studied realistically and practically.

May I ask Dr. Lewin what prompted her remark? I should like to lay bare the source of the inaccuracy.—I am, etc.,

F. C. CONSITT,
Chairman, Training College Association.
London, W.C.1, Nov. 16.

Bronchography

SIR,—It is not a little surprising that in his paper on bronchography in your issue of November 11 (p. 950) Mr. Glass should have omitted reference to the most popular method of introducing radio-opaque oil into the bronchi—namely, by means of syringe and needle, using the crico-thyroid route. Apart from its being less unpleasant to the patient, this method presents certain definite advantages over his: (*a*) the technique is less difficult of accomplishment; (*b*) it is more applicable to children, who object less to the needle than to throat manipulations; and (*c*) the preliminary anaesthetization requires only about one-tenth of the time. This last consideration is of importance when it is necessary to perform several bronchographies in one session.

While I am in complete agreement with Mr. Glass in his summary dismissal of the bronchoscopic introduction of iodized oil, I do not agree that bronchoscopy should in most cases precede bronchography. Careful bronchography sometimes renders bronchoscopy unnecessary; hence bronchography, the lesser procedure, should always be performed first.

The positions described by Mr. Glass as suitable for filling the various lobes leave rather more to chance than is desirable. Posturing based on gravity and the anatomical distribution of the bronchi, as described in the *Lancet* (1936, **1**, 1236), facilitates the filling of individual lobes and eliminates the necessity for fluoroscopic control, which must in any case be a matter of great difficulty in some of the positions advocated by Mr. Glass.

In conclusion I would point out that oleum iodisatum is now a pharmacopoeial preparation in Great Britain, containing 40 per cent. of iodine in poppy-seed oil.—I am, etc.,

The Liverpool Sanatorium, Frodsham, Nov. 21. G. S. ERWIN.

Spasmodic Flat-foot

SIR,—In his article in the *Journal* of September 16 (p. 602) Mr. Alan H. Todd described spasmodic flat-foot as a distinct clinical entity, though he acknowledges it has not a pathology all its own. Why not, then, let it be classed as one of the accompaniments of flat-foot, early or late?—in my experience, more often the latter. Perhaps our adolescents in Australia are sturdier and do not go to arduous work so early in life as in London.

I quite agree with him that division or exsection of the peroneus longus is useless; I would say criminal. I have never seen a case that did not clear up with rest and care, in severe old cases with wrenching as well. The peroneus longus is one of the most useful muscles of the foot, and the French school of orthopaedics considered it the most important. On two points I would venture to disagree with Mr. Todd. From time to time I am a martyr to cramp in my feet and can only obtain ease by stretching the affected muscles. The second point is the use of inner wedged heel and sole. I know it is a very common practice, but none the less it is absolutely wrong mechanically. The foot is so constructed that the weight should be borne by the talus, calcaneus, navicular, and cuneiforms, most of it being transmitted to the first digit. As Humphrey the anatomist wrote many years ago, "Man stands in the animal kingdom literally on his big toe." All through that wonderful monograph *The Human Foot*, by T. S. Ellis, the same theme is delightfully maintained. This I also endeavoured to show by sections through the tarsal bones (*Deformities of the Foot*, Walsham and Kent Hughes, Chapter I). The lateral portion of the cuboid is purely cancellous and the medial portion contains but few longitudinal striae, whereas they are more numerous and stronger as we pass from the third to the first cuneiform. Any treatment, then, which tends to throw the weight of the body on to the lateral border of the foot is bad tactics. It is much better to raise the waist of the sole by a leather arch beneath the insole, its thickness and height being adjusted to the case in point. I have used this for nearly fifty years.

As regards the causation of the spasm, we are on an uncharted sea. We have disturbances in the mechanism of the foot, the earliest of which is often a slight but definite flattening of the dorsum lateral to the head of the talus and a dropping of the heads of the metatarsal bones. The peroneus brevis is generally involved with the peroneus longus. Could this flattening pull on the sheath common to both peronei, or can the irritation arise from pressure on the calcaneo-cuboid joint and thus cause the spasm? Spasm is as a rule the result of irritation from inflammation, and it might be suggested that by walking with the foot everted the distal insertion of the peroneus longus would be subjected to irritation. This would not apply to the peroneus brevis and does not occur in the tibialis posticus, the insertion of which into the talo-navicular ligament is certainly often subjected to much more irritation.

Mr. Todd in his article mentions the weak foot. What is it that makes some feet liable to flat-foot? In my opinion it is mainly due to diminution of dorsal flexion, which occurs in about 20 per cent. of people, leaving out the wearers of high heels. Ever since Schaefer wrote his article on non-deforming club-foot I have been keenly interested in the occurrence of a short tendo calcaneus, and was amazed to discover its frequency. We seldom see a very severe flat-foot without a shortened tendo calcaneus, and I find it almost universally present in people who sprain their ankles and knees. It is seldom noted before 7 years of age, when an awkward gait or swollen ankle draws somebody's attention and advice is sought. It is easily removed by stretching exercises up to 15 years of age and even later. While on the subject of a contracted tendo calcaneus, if an operation of lengthening be required might I suggest that this is best obtained by cutting away the insertion from the bone. I have never seen a weak tendon or wasting of muscle follow this procedure during the last twenty years.

As regards priority of mention of spasmodic flat-foot, may I quote from the book I wrote with Mr. Walsham in 1895 (p. 424): "The peronei are in advanced cases tense, either from spasm or from adaptive shortening. The tendo Achillis is in some instances shortened, as are also the dorsal flexor muscles." On pages 438-9, under the heading of "Spastic or Spasmodic Flat-foot," a fairly accurate description is given of early adolescent and advanced cases. My late collaborator ascribed it as due to spastic paraplegia, and stated at the end of the paragraph that he had not met with a severe rigid case in adults. I wrote the article on pathological anatomy of acquired flat-foot, but I was not responsible either for the statement as to spastic paraplegia or for the "we" in the last sentence. Collaboration is always difficult, and especially so when, as in this case, the two authors were 13,000 miles apart for the last two years.—I am, etc.,

Melbourne, Nov. 6. W. KENT HUGHES.

Streptococci of Scarlet Fever

SIR,—I notice in your annotation of November 11 (p. 960) on the streptococci of scarlet fever you refer to the fact that scarlet fever follows the invasion not of one strain only but of several groups of haemolytic streptococci. You ask if it would not be logical to group all forms of streptococcal invasion under a comprehensive title. I should like to know whether there is any experimental proof that mutation of the various strains of haemolytic streptococci does take place.

For some years I have been resident in Kunming, a city in South-West China, and have been interested in epidemiological matters. A survey undertaken by the Research Council of the Chinese Medical Association, of which I was a member, during 1933 and 1934 amassed a great deal of information about the incidence of disease in China. *Inter alia* it was shown that scarlet fever was endemic in most of the provinces (Gear, H. S., *Chinese med. J.*, 1937, **51**, 203). Curiously enough, during the two-year period of the survey no special epidemic of the disease was encountered. Thus in 1933 the total number of cases in sixteen areas where scarlet fever occurred was 208 out of 181,800 patients seen, and in 1934 it was 121 out of 218,000 patients seen. From 1926 to 1938 in Kunming the number of cases seen has been small compared to the total registered out-patients—twenty to twenty-five out of 16,000 to 18,000 per annum.

This year the city was grossly overcrowded owing to the effects of the war, and there occurred the first real epidemic of scarlet fever I have known there. It began in March and reached its peak in May. It was estimated that there were over 5,000 cases. In former years cases had been mild in type, somewhat like present-day scarlet fever in England, but now the disease was of the septic type with a somewhat high mortality. During the course of the epidemic there was a sharp rise in the number of cases of erysipelas. Normally these would average about one a month, but in April and May

I myself diagnosed about fifteen cases, and there were others. Two were of infants, and were associated with streptococcal infection of the mothers; the remainder were in adults over the age of 40. In no instance was a second case found in the same household, but it was evident that the disease was epidemic. To complete the picture of a general invasion of a population by haemolytic streptococci, there was a coincidental epidemic of streptococcal sore throat with a number of cases of quinsy. One sufferer from the latter complaint, himself a bacteriologist, went down with a typical and severe scarlet fever three weeks later.

I merely record the occurrence of epidemics of three different groups of haemolytic streptococci concurrently. The reaction to treatment by sulphonamide preparations was specific to each group. All cases of erysipelas recovered, including two patients who when first seen were desperately ill. Not only was a favourable response to adequate dosage prompter than in the other two groups, but the length of time of treatment was the shortest. Ordinary streptococcal epidemic sore throat responded well to treatment, though in some cases it was three or four days before there was marked improvement. Response to sulphonamide treatment in scarlet fever cases was less dramatic, and there was considerable variation. It rarely shortened the duration of the disease, but patients seemed easier with it. On the other hand, several untreated patients seen in the second week of the disease who were almost comatose showed dramatic improvement. This varying response to chemotherapy merely corroborates the known specificity of each strain of haemolytic streptococcus, but the problem of the genesis of each remains for solution.—I am, etc.,

London, E.2, Nov. 24. ALEXANDER J. WATSON, M.D.

Cancer and Pernicious Anaemia

SIR,—It was refreshing to read Dr. E. F. Hunt's letter in the *Journal* of November 25 (p. 1062) advancing the plea that investigation of the cancer problem should be directed along the lines of deficiency disease instead of prolonging the sterile search for some unknown virus or organism.

It is many years since Richard Cabot drew attention to the fact that both cancer and pernicious anaemia tended to occur in people of the same age period, and in a letter in the *Journal* I suggested as a corollary to this that cancer might indeed be also a deficiency disease. Acting on this theory I have given to many cancer cases, mostly of the inoperable and apparently hopeless type, liver both by mouth and intramuscularly, but unfortunately without any success. It would have been surprising if this therapy had been successful and in a way accidental, but I still think that it is on such lines that success will ultimately come; only it will not come without research, and that is why one would support Dr. Hunt's plea for an intensive inquiry.—I am, etc.,

W. LEES TEMPLETON.

London, N.6, Nov. 26.

Black-out and Ventilation

SIR,—I had visions of making a small fortune by patenting my solution of the combined problem of ventilation and eye-strain, but I don't know how to proceed, so, lest the war is over before others can benefit, let me present it to the profession.

The urgency of bedroom ventilation, with freedom to use my bed-light, was the original stimulus, and the "Thomson ventilating light-trap" evolved and simplified itself till it became three bits of wood, the actual blind or curtain being a matter of choice or of material available.

The trap I like best is in my sitting-room with a high bow-window; it has been passed by the authorities with three unscreened 100-watt lamps ablaze in the room, while I have free ventilation through the window open to two and a half feet from the top. Actually I used five pieces of wood in this trap. The amount of free ventilation depends on the size, and the size depends on the two end-pieces, which are rectangular, slotted diagonally from one corner to centre, and fixed by hinges to the sash (Fig. 1). Into the grooves fits a piece of ply-wood (Fig. 2) as wide as the distance between the end-pieces and as deep as half their diameter. Laths, slightly longer than the total width, secure the free corners of the end-pieces and hold the ends of the ply-wood firmly in the grooves (Fig. 3). All the wood, except outside the end-pieces, is painted matt black.

The cheapest way of covering this trap is to mount the blind belonging to the window at A, along the upper lath, have a cord across the window to pull the blind close to sash at B (Fig. 4), and cover the lower part of window, where blind now falls short, with paper or cloth or wood. Or the curtain or blind may be made long enough to fall below the bottom of the window. To avoid a haze of light passing the trap, especially on misty nights, care must be taken that the patch of ceiling immediately above is not directly illuminated.—I am, etc.,

Grimsby, Oct. 16. E. J. THOMSON, M.B., Ch.B.

FIG. 1.

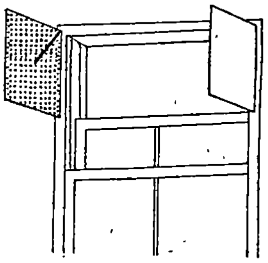
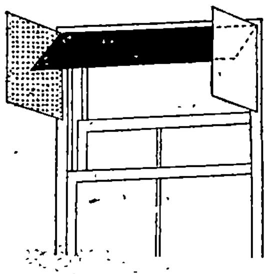


FIG. 2.



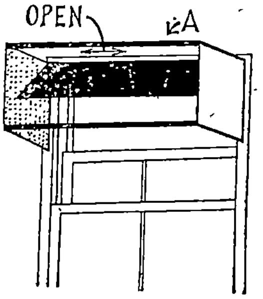


FIG. 3.

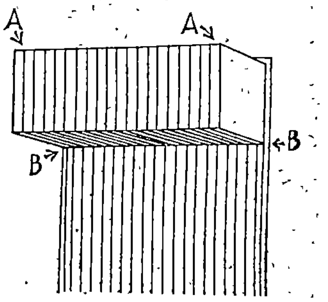


FIG. 4.

Administration of A.R.P. Casualty Services

SIR,—With reference to Dr. H. Mainwaring Holt's interesting and informative letter on the administration of A.R.P. casualty services (*Journal*, November 18, p. 1021), it may be of interest to your readers to know that the Halifax A.R.P. casualty services schemes provide for the attendance of doctors at the scene or scenes of disaster. It may be objected that such a provision is not sanctioned in any of the numerous official circulars. Nevertheless I am sure it is well worth the attention of A.R.P. casualty services administrators.—I am, etc.,

GEORGE C. F. ROE,
Medical Officer of Health.

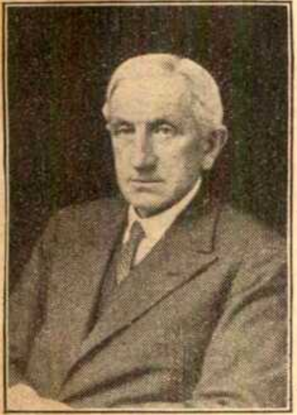
Halifax, Nov. 22.

The E.M.S.

Two letters commending to the profession the plan for reorganizing the Emergency Medical Service, which was announced in our last issue, will be found on the first page of the *Supplement* this week. They are signed by Sir Robert Hutchison, President of the Royal College of Physicians of London, Mr. Hugh Lett, President of the Royal College of Surgeons of England, and Professor W. Fletcher Shaw, President of the Royal College of Obstetricians and Gynaecologists; and by Mr. H. S. Souttar, Chairman of the Central Medical War Committee and of the Council of the British Medical Association.

Obituary

WILFRED TROTTER, M.S., F.R.S., LL.D., M.D., D.Sc., F.R.C.S.



The death of Mr. Wilfred Trotter on November 25 has taken from us an intellect of brilliance outshone in our century by none in medicine, science, and philosophy. Among the losses that we have sustained in medicine in the last decades have been many great men whom we could not afford to lose nor could we truly replace. All had their hosts of admirers, but we believe that neither among these illustrious men nor in the number of their followers may there be found any affronted by the statement or disputing that Trotter had no equal. Our time has given us surgeons, physicians, experimentalists, whose magnificent achievements gave light and leading to those that cared to follow, yet a surgeon who attained the highest in his intensely practical art and who at the same time graduated through medicine to philosophy is among them unique. Philosophy—the love of wisdom and of the knowledge that concerns the most general causes and principles—is commonly approached through early years of more constricted studies, yet the power so attained to contemplate the abstract and mentally to encompass it may discard the earlier preoccupation with the practical aspects of science. Some philosophers there have been, however, whose early pursuits and whose intellectual progress have instead advanced together, so that the abstract has shared with the concrete the objects of their thought. Such a one was Trotter, and while we confidently assert his claim to the highest seat in surgery, at the same time with diffidence we suggest that the daily contact with the practical, involved in the pursuit of his profession, gave his philosophy also a force and distinction that it might have lacked had he approached it through another education. Who can doubt that had Trotter's delicate youth been followed by a life passed in the contemplative retreat of an ancient university, had his occupation offered no hard problems urgently needing practical solution, not only would surgical advance have been by so much the less, but his philosophy itself would have lacked something of its vigour, its nip of common sense?

The writer has no knowledge of Wilfred Batten Lewis Trotter's birthplace or of his parentage, and little of his later home life. As a boy he had a spinal malady that kept him, so he said, on his back until the age of 16, and after that he was for a short time at University College School. He entered University College in 1891, and passed his M.B. with distinction in medicine in 1896. Later he gained a gold medal and scholarship in the B.S., and of course the higher qualifications and degrees. In the Medical Faculty of University College in those days were a number of luminous intellects, among which, if we are to judge by Trotter's conversation, for him the most powerful influences were those of Victor Horsley and of John Rose Bradford. In such an atmosphere of intellectual clarity he learned his medicine; but we should not forget that in surgery it was of a man of far different type, his chief Arthur Barker, that he ever after spoke in terms of the greatest respect. Horsley was the physiologist, the experimenter, who worked surgical miracles in the cranial cavity, but Barker was the Master. He was the predecessor of the expert technicians of the present day whose pleasure it is to incorporate in their work at the first possible moment the latest advances in theory and procedure, who have at their fingers' ends the surgical progress of the rest of the world and in their minds its literature. Though Trotter never assigned to technique anything but a secondary importance, his fingers were skilful partly because he had learned his art from Barker, who during Trotter's youth brought from abroad so many things now standardized in surgery.

Trotter's own influence on his contemporaries was now growing, and on his immediate juniors was so great as to be formative and exclusive. There are indeed at this present time many men, educated at University College in the first decade of the century, whose minds were formed and polished by Trotter, and in whose conversation his habits of speech may still be heard. Some even may be recognized by their curiously softened and lazy-sounding sibilants.

Nevertheless his progress to the honorary staff of University College Hospital was retarded by the fact that always in front of him was the flashing brilliance of Rupert Bucknall, to whom in those early days he had to give place. He was appointed surgical registrar in 1901, and it is thus true that the century and Trotter's influence dawned together. It is a tradition, which the writer is sorry to say that he has never confirmed or clarified, that at this period Trotter removed a carcinoma of the cervical oesophagus with success. He then demonstrated anatomy for a few years, until in 1906 Horsley's premature resignation permitted his election to the honorary staff as assistant surgeon. He had already been elected to the staff of the East London Hospital for Children, where his new associates proved themselves impressionable, as had been those of his own school, where he made many devoted friends.

Delay in the occurrence of a vacancy in the staff of U.C.H. had probably an important bearing on the future, because then, for the first and maybe for the only time in his life, he had the unfatigued leisure that was necessary for the working of his mind. It was then that he wrote what is perhaps his greatest claim to academic distinction, his two papers published in the *Sociological Review* in 1908 and 1909, on "The Instincts of the Herd," written thus at about the age of 34, when nearly all other aspirants to surgical staffs would be straining to become known by contributions to professional literature.

Now firmly established in his chosen career he began to hold that sway as leader and teacher that he retained with effortless right until his retirement thirty-two years later. Almost at once he betrayed his interest in difficult surgical problems, the same ones mostly that beset the surgeons of to-day, and began to have a reputation for carrying through the removal of malignant growths that had daunted others to inaction. The mouth and pharynx provided some of the unsolved problems of those days, yet in a few years, and with what the chief of a modern Continental clinic would regard as an insignificant number of cases, he established the surgery of malignant disease of the pharynx on a firm basis. His Hunterian Lectures of 1913 are models of clarity in clinical description, and the greater part of his operative recommendations were subsequently proved to be sound. Trotter was nevertheless the last man to belittle any kind of progress, and contemplated with a detached interest the temporary sweeping away of all his oral and pharyngeal work by the various forms of radiotherapy, accepting fully the proposition that if radiotherapy could apparently cure for the time being the far too numerous inoperable cases, might it not do the same for the operable ones? And might not the failures of radium disappear with increasing experience and knowledge? He made no further comment on his own work than to remark that owing to the introduction of radium it had never had a chance. His operations had not become established practice because few people other than his own assistants had ever learnt their underlying principles or their anatomical bases. Time has passed, and who would say to-day with confidence that radiotherapy has anything better to offer to a woman suffering from carcinoma of the hypopharynx than has a lateral pharyngotomy?

From Horsley he caught an interest in the thyroid gland and in thyrotoxicosis, and from his election to the staff until his retirement he operated frequently on cases of Graves's disease. Horsley and he were probably the pioneers in this country of this now popular operation.

He became greatly absorbed in head injuries, and applied his original mind to the elucidation of their pathology. His work on concussion, though not at the present time accepted as a completely satisfactory explanation, has a closer correspondence to the symptomatology than any other supposition so far expressed, and forms part of a larger conception of the mode of production of symptoms in the central nervous system. It was elaborated in a way that was characteristic of Trotter's thought, for he did not begin by making observations on damaged brains himself. He assembled the known main facts, and then from physical laws reconstructed in his mind what *must* happen to the brain in certain circumstances. He then compared the known clinical and pathological consequences with his deductions, and found a close correspondence. These views he expressed in an important article on the scalp, skull, and brain that appeared in Choyce's *System of Surgery*. Since then he has made a number of contributions to the subject of cerebral and spinal injury, both major and minor, among which his paper on subdural haematoma in the *British Journal of Surgery* in 1914 established clearly the nature of the lesion.

Neurological surgery presented another field whence success could sometimes be snatched from a morass of difficulty and confusion, and about this time he carried out with his assistant, Mr. Morriston Davies, and on their own limbs some work on the clinical evidences of peripheral nerve regeneration that has also stood the test of time and is now recognized at its true value in the simplicity and clarity of its conclusions.

So passed the time until the outbreak of war, prior to which, in March, 1914, he had succeeded to the senior staff on the resignation of Mr. Bilton Pollard. It was early in the year 1914 that the present writer began to know him well, having the fortune to become his house-surgeon. As dressers we had regarded him with awe, though we admired with true reverence the perfection of his work. We agreed that he never made a mess of anything, big or small, and that when he was defeated, as he often was, it was because, as he frequently demonstrated, what in fact proved to constitute inoperability was not yet clear to him. It was thus with the patients presenting the syndrome of the malignant nasopharyngeal tumour, described by him and Dr. Wilfred Harris, in which disease he finally came to the conclusion that the existence of his syndrome in a case was an indication of its inoperability, though a far more formidable-looking tumour of the upper jaw or ethmoid might possibly be removed at operation with anatomical perfection.

His teaching of general surgery at this time was a delight to hear; always concerned with principles, he would patiently talk to us and in questions try to get from us response to his stimulus. A flash of his famous lambent wit would usually show that he had failed, but he would then begin again and perhaps again, and he would not leave his subject until a light had dawned in our thick heads that we were being led patiently to some useful and practical conclusion. A thoughtful consideration with a practical deduction was his usual method, and never the one without the other when a patient's welfare was in question. There was no kind of patient whose trust and affection he did not immediately impound, and he would listen to long and irrelevant stories of their often trivial complaints with simple and sympathetic courtesy. It was true that the play of every kind of mind was his favourite study, and though we would sometimes draw the conclusion that from his point of vantage the differences between the clever and the stupid, the malevolent and the helpless, were relatively slight, this was not in fact the whole explanation of his attitude, in which an important factor was his own exquisite sensibility that made him unable to be outwardly discourteous to anyone. Fortunately he had no scruples when the object of his study was out of hearing, and his estimate of this particular example of the human mind was usually forthcoming, delivered with a quiet but impish and by no means strait-laced humour.

During the war he did much important work in London for wounds of the head and spine, and also in response to official pressure found time to republish in book form his two articles on the herd instinct with further newly written chapters dealing partly with the applications of his theorem to the state of war. Some there were who, in the easier comprehension of the newer part, thought it was not the equal of the earlier, but his studies of the herd habits of wolves and his comparison with those of the German nation have an unpleasant truth for us to-day. It is no idle hope that his views on the disruption of the wolf herd as an offensive body when an enemy herd is stronger may once more indicate the essentials of the present situation in Europe. Trotter was rarely wrong.

It was not until 1920 that return to London permitted the present writer to renew his acquaintance. Five years had made a great change. In 1914 he had been the pride of the small circle of our hospital, hardly known elsewhere except in certain professional and intellectual groups. In 1920 he was famous. He was the acknowledged authority on the subjects of malignant disease of the upper respiratory passages, of neurological surgery, and of the thyroid gland. He was the consultant that others would turn to when in doubt and his opinion was widely sought in difficulties of all kinds; he was skimming the cream of London practice, and in U.C.H. he was as near a god as man can be in that candid and critical institution. From now on his pre-eminence was assured in the world of surgery, but it was not his published writings that gave him place—though these were important and unique—it was just himself; and it is probable that many doctors who trusted him implicitly had heard neither of the instincts of the herd nor of lateral pharyngotomy.

Honours came. The Council of the Royal College of Surgeons in 1924; the Royal Society in 1931—a signal honour for a surgeon; Honorary Surgeon to His Majesty the King in 1932 and Serjeant Surgeon thereafter; President of the Association of Surgeons in 1932; the Gold Medal of the Royal Society of Medicine in 1938, and numerous honorary degrees. It is no secret that the Royal Society and the Royal College, of each of which he was vice-president, paid especial heed to his counsel; but unfortunately about this time his health began alarmingly to fail, and one may say that for the rest of his life he preferred to perform only those public functions that he knew were the duty of one of his exceptional gifts. In 1932 he delivered the Hunterian Oration, taking as his subject "The Commemoration of Great Men." In this remarkable lecture he chose the theme that it would be better to help great men during their lives than to commemorate their deaths, and for the rest of his life, and indeed for many years before this, he devoted much of his energies to helping younger men to succeed. The oration was in the best style of his maturity, its penetrating criticisms, its crystal wit, and the polished art of its wording affording his hearers a wondering momentary entry into the working of his mind and the originality and range of his thought. His choice of language on all such occasions, as in private conversation, was appropriate to the keenness of the matter, and, often modelled on the Scriptures, its Biblical simplicity gave him epicurean pleasure.

About this time he took the characteristic step of retiring from his private practice while retaining his appointment at U.C.H. Having toyed with the idea for years, one day he said he would wait no longer, and from then on gave his whole time to his official duties, to his hospital and school. On the retirement of Professor Choyce in 1935 he took over the professorship of surgery and the directorship of the Surgical Unit at U.C.H. In the two years left to him he set himself to train a number of fortunate young men as he would have them trained. He spent his days stimulating their brains and teaching them from his experience, passing hours and hours in the theatre watching them operate and giving counsel. No one was ever more acutely bored by the trivial in surgery, as in everything else, and it was the mark of a great man that Wilfred Trotter should spend his now failing health over what he knew was trivial neither to his patients nor to his assistants.

At the end of 1928 he had with Sir Hugh Rigby earned the national gratitude for his surgical care in bringing his late Majesty King George V through his desperate illness, and though his Royal patient pressed him personally to accept an honour, he characteristically declined this mark of gratitude, preferring to remain one singled out from others by his attainments only.

In this sketch of his professional life claims to a remarkable pre-eminence have been made, and it would not be fitting if no short indication were given of how he did his work. There have been many great surgeons who have each placed themselves at the head of a group of assistants and who have achieved their important results by elaborating technique and by governing the smooth working of what in these days are called their teams. Such men have often stressed their technique as the cause, and the statistical estimations of their results as the justification, of their success. Not so Trotter, who saw in the post-war elaboration of technique the danger that the essentials might be forgotten in devotion to the smooth working of the machine, and in the modern passion for "statistical research" the obliteration of the individual, the neglect of consideration of the extent to which each several sufferer might be benefited by treatment, inestimable in his opinion by any percentage figures.

His method was to do his own personal very best for a few patients, and in his private practice the real care of patients was where the responsibility was, even to the doing of dressings and the removal of stitches, which services he performed himself knowing that no gentler hands were ever given to a surgeon. In operating there was no elaboration of material and hardly a special instrument, so that some have been known to conclude that his technique was poor. In fact nothing was further from the truth. His effortless skill was perfection and needed no apparatus to show it off, his temperature charts the despairing envy of his juniors. A pharyngeal growth would present itself to him in the middle of his wound apparently of its own volition as would a spinal tumour. In his early days he would plate fractures with restoration to an anatomical and functional perfect normal so that we thought then that finality had been reached in fracture management. His secret was that to every case he applied his brains anew, and later, if necessary, a skill so gentle and so great that it sometimes escaped attention.

Reference has been made to Trotter's health, which, never robust, had since 1925 caused anxiety to many in his own circle, more especially as his attitude regarding his personal concerns was one of the closest reserve. It is now breaking no confidence to say that during the closing years of his greatest professional activity and ever after he suffered pain and unending discomfort with an unbroken fortitude that was true to type. Yet as recently as this last summer he kept an engagement to address the students of St. Mary's Hospital, in words that might have been intended for the Royal Society.

In attempting a memoir of a figure of his international, philosophical, and surgical importance the writer feels his inadequacy, but has taken courage from Trotter's own Hunterian Oration—"The commemoration of great men is of less importance than their living recognition." If our time has produced no Bossuet for Trotter, it did not fail to appraise him during his life, for the worth of few men has been more justly estimated during life. So we will end with the thought, not that we have justified the claim of our opening paragraph that he was the greatest surgeon of the century, but that since surgical, philosophical, and intellectual worlds have long recognized its justice, we have our great man's own authority for believing that these hasty sentences are a matter of little importance.

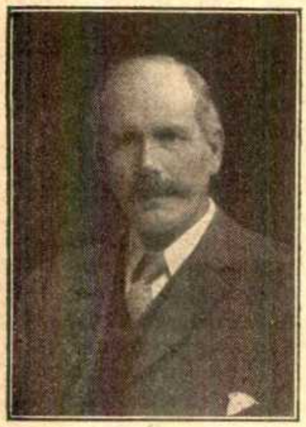
J. T.

[The photograph reproduced is by Russell, London.]

Dr. DAVID EIDDON PARRY died on October 3 after four months of illness at the early age of 28. He received his education at Brecon College and St. Mary's Hospital. In 1936 he obtained the diplomas M.R.C.S., L.R.C.P., and graduated M.B., B.S. He was a fine rugby and cricket player; he was captain of the Brecon College Rugby XV and vice-captain of the cricket team. He was captain of the St. Mary's Rugby XV during its cup-winning season 1936–7. After qualifying he held the post of resident medical officer at the Brighton Fever Hospital and Sanatorium, and last February took up the appointment of assistant medical officer of health for Carmarthenshire, having obtained the D.P.H. in 1938. His sadly premature death is deeply regretted by many professional and athletic colleagues and friends. Dr. Parry was a member of the British Medical Association, and jointly reported on a case of sulphanilamide poisoning which was published in the *British Medical Journal* on September 9, 1939.

C. J. BOND, C.M.G., F.R.C.S.

Consulting Surgeon, Leicester Royal Infirmary



We regret to announce the death on November 23 at his home in Leicester of Mr. Charles John Bond. Born on October 27, 1856, the son of George Bond of Bittesby, Leicestershire, he was educated at Repton School. After a year or so in agriculture he entered as a pupil at the Leicester Royal Infirmary early in 1875, and in October of that year became a medical student at University College, London, where later he served as assistant demonstrator of anatomy and won gold medals in physiology and anatomy and silver medals in surgery, midwifery, and medical jurisprudence. Having qualified in 1879, he went to the Bedford General Infirmary as house-surgeon. He obtained the F.R.C.S.Eng. in 1882, and returned to the Leicester Royal Infirmary as resident house-surgeon; in 1886 he was appointed honorary surgeon. On retiring from the active staff in 1912 he was elected consulting surgeon and a vice-president of the hospital; in the following year he served as vice-chairman of the board of governors, and from 1925 to 1932 as chairman of the drug and medical stores committee. For two years he presided over the Literary and Philosophical Society of Leicester, which made him a life vice-president. He served on the Leicester City Council for two years, and for seven years on the Leicester Health Insurance Committee, and in 1925 received the Freedom of the City. He opened the new operating theatres at the Royal Infirmary in 1929, and to a large audience related experiences of the days before antiseptic surgery. It was he who, with Sir Charles Marriott, had introduced aseptic methods at the hospital. Other offices held by Mr. Bond were those of vice-president of the Leicestershire and Rutland University College, president of the Leicester Medical Society, and vice-chairman of the Medical Consultative Council of the Ministry of Health. He had been a member of the Departmental Committees on the Cause and Prevention of Blindness and on Cancer, and chairman of the Industrial Fatigue Research Council. He was also a member of Lord Trevethin's Committee on the Prevention of Venereal Disease, a past-president of the Society for the Study of Inebriety, and an original member of the Sociological Society and the Eugenics Society. The British Association honoured him with life membership, and he was elected a Fellow of University College, London, in 1924. During the last war he represented the Medical Research Council on the Inter-Allied Commission on the Treatment of War Wounds, which met in Paris; he was consulting surgeon to the Northern Command with the rank of honorary colonel A.M.S., was twice mentioned in dispatches, and created C.M.G. in 1917.

Mr. Bond joined the British Medical Association in 1881, and at the Annual Meeting of 1905 gave the Address in Surgery on "Septic Peritonitis." In 1924 he was vice-president of the Section of Medical Sociology, and president in 1926. He gave the William Withering Lecture before the University of Birmingham in 1932, taking as his subject "Human Biology."

Dr. Astley V. Clarke writes:

The passing of Mr. C. J. Bond at the ripe age of 83 removes from Leicester probably the best known and the most respected citizen of the last half-century. Probably, also, his was the best-known Leicester name of his time in England and beyond its shores.

His life can be regarded in three parts: the beginning as a farmer; the professional life as a medical practitioner and surgeon; and the full scientific life after he retired from active work on the Leicester Royal Infirmary honorary staff. The farmer stage was before my time, as also, of course, the period of his student days, during which he formed a great and lasting friendship with Victor Horsley, but I do remember him being house-surgeon at the Leicester Infirmary in 1882. These were the days of the sudden expansion of the fields of surgery, and Mr. Bond became known as a pioneer of the new aseptic technique. Not only did he become well known for his surgical skill, but in his personal manner towards his patients he endeared himself to everybody. In those days before telephones and motor cars he had many years of intensely hard work; driving and by train, trying to get somehow to the many and distant calls on his professional services, for he covered a large area. In these days, too, the spirit of research in him kept him always investigating and investigating into scientific phenomena.

When the British Medical Association met in Leicester in 1905 he was president of the surgical section and established for himself a fame in surgery far and wide by his presidential address on a subject which he had been able to investigate in connexion with his surgical operations. He always intended to retire from his active practice so that he could have more time to devote to research, and so in 1912 he gave up private practice, continuing only his hospital work for a year or two longer. Then he went to Australia in 1914 and returned to find that England was at war. He offered his services as consulting surgeon and devoted himself immediately to operating on recruits at the Royal Infirmary who had hernia or other recoverable conditions which prevented them from being accepted for service. During the great war he made several visits to France in a consultative surgical capacity, and by his knowledge so acquired he assisted those in Leicester who were doing the military surgery and inspired them in the use of new techniques. He was invited to serve on Lord Dawson's committee which was set up to consider hospital conditions in England and to make suggestions for a model scheme for hospitals and auxiliary hospitals. This brought him in contact with all branches of the profession.

Mr. Bond took a keen and active part in the starting of the University College immediately after the war was over. He was a generous benefactor, but his advice and encouragement to that scheme were of supreme value to it. As a member of the College Council he has continued assiduously in his attendances and has given much time to seeing into the details of the work also. As a city councillor for three years—as an Independent—he gave valuable help in the reforming of the isolation hospital when Alderman Wilford was chairman of the Health Committee; as a scientist of national repute his work in eugenics and heredity has been his chief hobby, and he enhanced his fame by his rearing of cocks and hens to study breeding phenomena. This attracted many scientists to visit him and his breeding houses in his garden in Leicester. In every intellectual sphere in Leicester he was deeply interested and helpful. He played a prominent part when the British Association met here recently. Leicester honoured him and itself when he was made an Honorary Freeman. His kindly disposition endeared him to all, and Leicester mourns his end, for he has been a wise counsellor and a great inspirer for the generations which have only been too ready to learn from him. His full and varied life and accomplishments will for long be a treasured memory, not only by the medical profession but also by the many activities for social betterment of the citizens to which he has been a trusted friend.

Dr. C. Killick Millard writes:

By the death of C. J. Bond the city of Leicester has lost its most distinguished and most beloved citizen. I enjoyed the great privilege of his friendship for very many years. I was associated with him for some years on the Leicester branch of the National Council for Combating Venereal Disease, of which he was chairman and I honorary secretary. We were also associated in a similar relationship on the Leicester Cancer Committee; and for the last five years of his long and useful life we were still more closely associated in connexion with the Voluntary Euthanasia Legalization Society, which we founded together, he being chairman of the executive committee from the outset.

Others will testify to his work as a brilliant operating surgeon, and to his many and important contributions to science; also to his great and practical interest in many forms of public and social work; so in this brief note I will confine myself to a reference to his personal character. Few men can have been more loved and respected by his friends. Utterly unselfish in all that he did, scrupulously conscientious in everything he undertook, he was the very essence of courtesy, kindliness, and consideration for others. The dominant guiding principle of his life was love of his fellow men—how best he could serve humanity—and he devoted himself unsparingly to this object. He possessed true nobility of character to a quite exceptional degree. He carried modesty regarding his own achievements almost to an extreme, and but for this he could doubtless, had he wished it, have occupied an even more prominent position in the scientific world than he did. In spite of his advanced years his mind was keen and alert almost to the very end, and he maintained his interest in the many and varied lines of work in which he had been engaged. But in the later years of his life I think it may be said that one of his chief interests was voluntary euthanasia, and he had the satisfaction of seeing the movement for its legalization, which he had done so much to promote, thoroughly established and meeting with steadily increasing support.

NAUGHTON DUNN, M.A., M.B., LL.D.

Honorary Surgeon, Royal Cripples' Hospital, Birmingham; Surgical Director, Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry; Lecturer in Orthopaedics, University of Birmingham

We regret to announce the death on November 19 at Dolgelly of Mr. Naughton Dunn of Birmingham, one of the most distinguished exponents of orthopaedic surgery in this country and at the time of his death president of the British Orthopaedic Association. Mr. Dunn was a member of the Orthopaedic Group Committee of the British Medical Association, and he had acted as vice-president of the Section of Orthopaedics at the Annual Meeting of the Association in 1925.

Naughton Dunn was born in Aberdeen in 1884 and was educated in the grammar school and university of that city, graduating in medicine in 1909. In 1910 he went to Liverpool to take up the post of house-surgeon to Robert Jones at the Royal Southern Hospital, and soon found that orthopaedics was his true vocation. From the Southern Hospital he went to that famous home of orthopaedics—11, Nelson Street—as one of Robert Jones's private assistants, and during that time acted as assistant demonstrator of anatomy in Liverpool University. In 1913 an opportunity of establishing himself as an orthopaedic surgeon in Birmingham was brought to his notice. On the recommendation of his chief he was appointed surgeon to the Birmingham Cripples' Union, and he left Liverpool well versed in the principles and practice of the school of orthopaedics founded by Hugh Owen Thomas and Robert Jones. The new venture was soon to be interrupted by the war of 1914–18, and for the first two years Naughton Dunn served in the R.A.M.C. in the Eastern Mediterranean. He returned home after a severe attack of dysentery, to find Robert Jones at the head of the Military Orthopaedic Department of the War Office and engaged in establishing an orthopaedic centre at the Shepherd's Bush Hospital, London. Dunn became one of the original members of the staff of this great hospital, and later was transferred to Birmingham to take charge of the military orthopaedic centre there. After the war he used his exceptional training and experience in the development of orthopaedic schemes in the Midlands. He built up a large consulting practice and began to attract as pupils and assistants a succession of young men who found in him the qualities of leadership. His pre-eminence in his specialty led to his appointment by the University of Birmingham as lecturer in orthopaedics. Among the many hospitals which sought his services three became the main objectives of his life work—the Woodlands Hospital in Birmingham, the Warwickshire Orthopaedic Hospital at Coleshill, and, after the death of Sir Robert Jones, the Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry.

Naughton Dunn was one of the original members of the British Orthopaedic Association and for a number of years served on the executive committee, finally becoming president in 1938. He also held the office of president of the Orthopaedic Section of the Royal Society of Medicine, and became a corresponding member of the American, French, and Australian Orthopaedic Associations. The honour which he valued most of all was the degree of LL.D. conferred on him by his own university in 1937. During the years which followed the last war he maintained a steady output of contributions to surgical literature on practical and clinical aspects of orthopaedic surgery. His most notable contribution, which brought him an international reputation, was his work on the operative treatment of paralytic deformities of the foot.

"N. D.," the name by which he was affectionately known to his pupils, was an outstanding personage in the profession of medicine in this country. He had a genius for creating friendships among both his contemporaries and his juniors, and as a host he was unrivalled. His white hair, rugged countenance, and twinkling smile made him a conspicuous figure in all gatherings of orthopaedic surgeons at home and abroad. On first acquaintance he created the impression that he lived only in the present, so leisurely and deliberate were many of his activities. But behind a singularly attractive personality there was a keen and critical mind which enabled him always to see several moves ahead in matters of important policy. His death in the prime of life leaves a gap in the ranks of British orthopaedic surgeons which cannot easily be filled, and he will be affectionately remembered by a great number of colleagues in the United States and the Dominions.

Dame Agnes Hunt, D.B.E., R.R.C., writes from the Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry:

The hospital, training college, and after-care mourn the death of Naughton Dunn, senior surgeon of the hospital and loyal pupil of the late Robert Jones. Very many of the past and present patients of this great hospital have cause to love his name, I among them. Never a strong man, he made light of his ailments; even when the dread disease from which he died had fastened its grim tentacles upon him he still came to minister to us, forgetting his own pain and weakness in order to help us who were not nearly as ill as he was. To Naughton Dunn's love and loyalty to the hospital we owe very much. He never missed an opportunity of speaking well of our scheme and interesting people in the hospital and in the various branches of its work. But perhaps the greatest work he did for crippled humanity was by passing on Robert Jones's teaching to younger orthopaedic surgeons, training them in the work he loved so well.

[The photograph reproduced is by Elliott and Fry, Ltd.]

Dr. F. Hernaman-Johnson (London) writes: I should like to add my tribute to the memory of Dr HENRY AUGUSTUS ELLIS. We were colleagues on the staff of the Margaret Street Hospital for Diseases of the Chest for twenty years. A mutual friend once remarked to me, "None of us was ever as young as Ellis; none of us will ever be as old as Ellis." This was indeed a true saying, for Ellis combined an extraordinary freshness of outlook with the wisdom of an elder statesman. Coming to London when he was nearly 60 he performed the remarkable feat of establishing within a few years a quite considerable consulting practice. His therapeutic methods so far as they applied to the body were original and often successful; but he was also a master in all that pertains to the action of mind on body. He did not confine himself to the usual case history, but induced patients to tell him their intimate thoughts and feelings. I have known many instances in which his sympathy and understanding turned despair into success. Ellis never spared himself, either mentally or physically. His medical friends believe that his experiments on himself with strange drugs laid the foundation of the cardiac weakness to which he ultimately succumbed.

Dr. WALTER GRAHAM REYNOLDS, who died at Chatham on November 16 at the age of 53, was educated at Marlborough College and in Switzerland, and studied medicine at St. Mary's Hospital, qualifying M.R.C.S., L.R.C.P. in 1912. He then held three house appointments in succession at St. Mary's, and after the war worked as clinical assistant at the Samaritan Hospital for Women. In 1921 he went out to China and was appointed visiting surgeon to the Canton Hospital, medical officer to H.B.M. Consul-General, port medical officer for Canton and to the Chinese Maritime Customs and Postal Service. "H. A. B." writes: Dr. Graham Reynolds had been aware for some months that his life could not be of long duration, but with exceptional courage and cheerfulness he had carried on, hiding from all except his intimate friends the knowledge that must have been ever present with him. On the staff of the Canton Hospital he did much good surgical work. His kindly and generous treatment of the various missionaries with whom he came in contact brought him the grateful thanks of the Bishop of Hong Kong when the time came for him to leave the East. He also received the thanks of the Consul-General for his work in connexion with the British Concession. In 1930 he came to Chatham, where he soon established for himself a position of reliability and affection, not only among his own patients but also with his brother practitioners, and was until recently chairman of the local Division of the British Medical Association. Outspoken perhaps, but full of kindliness, he was ever willing to lend a friendly hand to all and sundry, and his integrity was unalloyed. Well may it be said of him, "He loved his fellow men."

Dr. CHARLES JOHN CADDICK died suddenly at Nakuru, Kenya Colony, on November 10, aged 65. He was born in 1874, the second son of Mr. Alfred Caddick of West Bromwich, and educated at Edinburgh University, where he graduated as M.B. and C.M. in 1897, also taking the F.R.C.S.Ed. in 1902, the D.P.H.Cantab. in 1904, and the D.T.M. of the London Colleges in 1920. He served in the South African War of 1899–1902 as surgeon to the Imperial Yeomanry Hospital, and in the war of 1914–18 with the rank of major in the R.A.M.C.T.; and afterwards in the Colonial Medical Service in Kenya. He had also been consulting surgeon to the Walsall General Hospital. He joined the British Medical Association in 1898, over forty years ago.

Universities and Colleges

UNIVERSITY OF OXFORD

At a Congregation held on November 25 the degree of Bachelor of Medicine (B.M.) was conferred on J. N. Macdonald.

UNIVERSITY OF CAMBRIDGE

Committee for Medical Radiology and Electrology

The Faculty Board of Medicine has appointed Dr. G. S. Graham-Smith, Dr. G. H. Orton, Dr. Ff. Roberts, Dr. F. G. Spear, Mr. G. Stead, Mr. R. Williamson, Dr. P. J. Kerley, Dr. W. P. Philip, Dr. Russell J. Reynolds, and Professor Sidney Russ to be members of the Committee for Medical Radiology and Electrology for the year 1940. The report of the Committee for the year 1938–9 has been published in the *University Reporter* of November 21. This recalls that at the end of September, 1938, the university lectureship in physics as applied to medical radiology became vacant by the resignation of Mr. Stead. It was decided not to appoint a new lecturer and to discontinue diploma teaching in Cambridge. As in previous years, courses in physics were given in London at the Middlesex Hospital Medical School and at King's College. Lectures in radiology, electrology, and pathology were given at the British Institute of Radiology, and clinical instruction was provided in the radiological departments of various hospitals.

Medical Examinations in War Time

In Congregation on November 24 it was resolved that students otherwise qualified to present themselves for the first or second part of the Final M.B. Examination in December, 1939, whose evidence of medical and surgical practice with clinical instruction falls short by not more than three months of that required by Regulation 30 (*e*) or 32 (*a*) for the M.B., B.Ch. degrees, may nevertheless present themselves for that examination if their candidature shall have been approved by the Faculty Board of Medicine. (The Faculty Board will satisfy themselves that candidates who seek this temporary concession have been prevented from completing the last three months of their clinical instruction by circumstances arising from the war and for no other reason.) It was further resolved that students other than those covered by the above provision who wish to present themselves for the first or second part of the Final M.B. during the present academical year, but are unable to produce all the evidence required by Regulation 30 or 32, may nevertheless present themselves for examination if their candidature shall have been approved by the Faculty Board, provided that they shall not be allowed to proceed to those degrees until they have produced the evidence required by those regulations. (Certain candidates may have difficulty in obtaining such facilities for instruction and practice as would justify their being granted the necessary certificates, although sufficient instruction to justify their candidature may be available. The Faculty Board have undertaken to satisfy themselves that candidates who seek this concession have been prevented from obtaining the necessary evidence by circumstances arising from the war and for no other reason.) In accordance with a further recommendation of the Faculty Board, a student may be allowed to take both parts of the Final M.B. in his eighteenth term, inclusive (not exclusive) of his first term of residence, and to take either part in his sixteenth term, inclusive (not exclusive) of his first term.

Additional qualifying examinations in anatomy and in physiology will be held in December, 1939, and in March, 1940, and additional examinations in pharmacology in December, 1939, and in June, 1940, the dates to be fixed by the Board of Examinations.

At a Congregation on November 24 the following medical degrees were conferred:

M.D.—J. C. F. Lloyd-Williamson.
M.B., B.CHIR.—*J. Aspin, C. P. Petch.
M.B.—*J. W. Landells.

* By proxy.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

The Harveian Oration (postponed from St. Luke's Day) will be delivered by Dr. R. A. Young on Friday, December 15, at 2.30 p.m., in the large Library of the College.

Medical Notes in Parliament

Before Parliament was prorogued on November 23 the Royal Assent was given to the Official Secrets Act and the Restriction of Advertisement (War Risks Insurance) Act. Prorogation ended a session which began on November 8, 1938.

The Speech from the Throne with which the King opened a new session of Parliament on November 28 announced that measures would be submitted such as seemed necessary for the welfare of the people as well as for the prosecution of the war.

Mr. Chamberlain intimated on November 28 that he would bring in a Bill to suspend the operation of certain Acts of Parliament. One of these is the Collecting Charities Act, due to take effect on December 1.

Mr. W. S. Morrison announced on November 28 that the rationing of bacon and butter would begin on January 8 at the rate of 4 oz. a week of each commodity for each individual consumer. Consumers were asked to restrict purchases of sugar to 1 lb. per head per week, though sugar was not included in the rationing scheme.

Reorganization of the E.M.S.

Dr. Elliot, replying to Dr. Howitt on November 23, said he had agreed with the representative committee of the medical profession upon a scheme which would enable specialists at present employed whole-time in the Emergency Medical Service to engage in other work, whether in general hospitals or in private practice [see *Supplement,* November 25, p. 225]. Under the scheme there would be attached to certain hospitals part-time specialists and consultants at a salary of £500 a year. This salary would cover not only the part-time work required at present, but any additional work appropriate to the grade which might be required in air attack conditions. His agreement with the committee also secured that arrangements for providing medical services of all kinds for casualties should be adapted to varying types of hospitals, so that there might be the minimum interference with the ordinary medical work of the hospitals.

Dr. Howitt asked if Dr. Elliot would arrange for an adequate return of nurses and hospital almoners. Dr. Elliot said he trusted that as the work of the central hospitals extended the return of adequate staff would be secured.

Dr. Elliot informed Sir Ernest Graham-Little that the arrangements announced to Dr. Howitt for transfer of consultants and specialists from whole-time to part-time service were open to these classes notwithstanding that they might have accepted the part-time agreement hitherto in operation. Sir Ernest urged the transfer of members of the voluntary staffs of hospitals to the new scheme in view of the urgent need for providing teachers for the medical students returning to London schools in increasing numbers. He reminded Dr. Elliot that in 1938 there were over 10,000,000 attendances in the out-patient departments of the hospitals, and asserted that all this service was in abeyance in the London area. It was impossible to conduct out-patient departments without the honorary staff, which could not be properly replaced by junior and inexperienced officers.

Dr. Elliot said he would certainly bear in mind the need for getting teachers for the medical students, but he could not accept the suggestion that the out-patient services had been in abeyance at London hospitals for ten weeks. This was at variance with information supplied to him by London hospitals. To suggest the service was in abeyance discouraged people from applying, which was undesirable. He agreed that the higher the medical skill obtained by the out-patient departments the better.

Answering Sir Percy Harris, Dr. Elliot said the basis of employment in the Emergency Medical Service of house officers was at the outset £350 per annum, normally on a three-months contract, plus board and lodgings or an allowance in lieu. This flat rate was somewhat in excess of the rates paid by voluntary hospitals, which varied widely according to the type of hospital. It had not been agreed with the advisory committee that no further individual enrolments should be made of house officers in the Emergency Medical Service, but that hospitals should receive a payment equivalent to £200 per annum for each of their house officers required for whole-time work under the Emergency Hospital Scheme. The precise allocation of this payment would be a matter for the hospital authorities. Sir Percy Harris asked for an assurance that Dr. Elliot was doing nothing to undermine the great London voluntary hospitals. Dr. Elliot answered that he could give this assurance. The Government was working in the closest consultation with the voluntary hospitals.

ORIGIN OF LONDON HOSPITALS SCHEME

In a reply to Mr. de Rothschild Dr. Elliot said the war-time hospital problem had been first examined by a committee of distinguished medical men and of others representing the hospitals under the chairmanship of Sir Charles Wilson. Making full use of this committee's advice, the present scheme was worked out by the Ministry of Health under the authority of Section 50 of the Civil Defence Act. The Ministry had frequent consultations, formal and informal, with the hospital authorities, whose views throughout had been fully taken into account. He had arranged to meet specially those responsible for the administration of the hospitals. The group officers appointed to take charge of the hospital sectors into which London and the Home Counties were divided were chosen as representing the voluntary hospitals in the London sectors, on account not only of their professional distinction but also other administrative experience at the teaching hospitals. Their duties, in general, were to supervise the working of the emergency medical arrangements in their sectors. After due consultation these officers were appointed by the hospitals themselves.

Sir Ernest Graham-Little intervened to assert that the selection was not made either by the medical committees or by the governing bodies of the hospitals. He asked Dr. Elliot to take what measures he could to modify the selections.

Replying further to Mr. de Rothschild, Dr. Elliot said the hospitals in the London region which had been increased in staff and equipment under the Emergency Hospital Scheme were mainly municipal, because such hospitals had to be sought in the outer part of the region where were comparatively few voluntary hospitals capable of expansion. All the voluntary hospitals in the outer area which were capable of satisfactory expansion had been expanded. The majority of hospitals inside the county of London, whether voluntary or municipal, had been reduced in staff and equipment. Answering Mr. Isaacs, Dr. Elliot said the majority of the sector hospitals were adequately provided for the number of patients which they were intended to receive, but in several of them the equipment and organization required further improvement. To that end he was using the present period of quiescence.

Dr. Elliot further told Mr. Graham White that so far as might be the war-time organization of hospitals in the London sectors was of a character to enable medical officers to be liberated from financial and general administration and to concentrate on arrangements for treatment of patients. It was not possible to separate medical officers entirely from general administration.

Payment for Medical Care of Unaccompanied Children

Dr. Elliot said on November 16, in reply to Mr. Groves, that funds available for the medical attendance and treatment of unaccompanied children in reception areas would be distributed between the reception areas on the basis of returns showing the number of such children in each area. The local fund would be distributed to practitioners in accordance with a scheme prepared by the local emergency committee of the area. The schemes might provide for payments to be made to practitioners on such basis, whether capitation or attendance, as might be found convenient. The basis most commonly adopted was that of distribution in proportion to the number of children actually treated by the doctor during the period, irrespective of the number of attendances given.

Medicines in the Dark

On November 21 Mr. DAVID ADAMS asked the Home Secretary if he would permit chemists, doctors, dispensaries, and other persons or institutions connected with the health services to display a distinctive blue-lighted sign at night, both to enable people returning from work to get medical attention or to have prescriptions dispensed, and to ensure the provision of first-aid facilities for casualties in the event of air raids. Mr. MABANE said that the Home Secretary was arranging to permit the use of an illuminated sign in shops, including chemists. Hospitals and first-aid posts were already authorized to use night signs. He had received no representations that a similar concession should be made to doctors.

Medical Examination in Silicosis Cases.—On November 14 Mr. JACKSON asked the Minister of Health if he would cause instructions to be issued to approved societies to submit miners suffering from silicosis to a preliminary examination by the regional medical officers before their cases were submitted to the Home Office Medical Board, in view of the instructions in Circular A.S. 322. Dr. ELLIOT said that from paragraph 47 of the circular it would be seen that approved societies had already been informed that as a consequence of the suspension of the regional medical service the Silicosis Medical Board had been instructed that for the present they might entertain applications from workmen on payment of the reduced fee of 30s., if a certificate was produced from a qualified medical practitioner indicating that the workman was, or might reasonably be suspected to be, suffering from silicosis.

Unemployed Nurses.—Dr. Elliot has received representations that trained nurses are out of employment because certain public health and other hospital authorities had dispensed with temporary nurses. He does not think the unemployment extends to the permanent staffs of hospitals. The responsibility for staffing rests with the hospital authorities. No substantial number of nursing auxiliaries are undertaking hospital work

Medical News

We are asked to announce that the January meeting of the Pathological Society of Great Britain and Ireland will be held on January 12, 1940, in the Department of Pathology at Cambridge, and not at Guy's Hospital.

A meeting of the Medical Society of Individual Psychology will be held at 11, Chandos Street, W.1, on Thursday, December 14, at 2.30 p.m. A paper will be read by Dr. H. Crichton-Miller on "National Emergency: Discipline and Leadership."

On the proposal of Dr. H. Vincent the Académie de Médecine at its meeting on October 3 unanimously expressed the desire that the sale and consumption of absinthe or its substitutes should be rigorously prohibited to the civil population and army in France, its Colonies and Protectorates.

A memorial service for Dr. Jane Walker, C.H., was held at St. Barnabas's Chapel, East Anglian Sanatorium, Nayland, on November 17, the first anniversary of her death.

The twenty-fifth anniversary of the foundation of the Kitasato Institute for Infectious Diseases was celebrated on November 5 at the Institute, Shiba, Tokio.

Dr. Wilder Penfield, director of the Montreal Neurological Institute, has been elected President of the Royal College of Physicians and Surgeons of Canada.

La Presse Thermale et Climatique, which had hitherto been published twice a month, is now appearing once a month; and *Le Progrès Médical*, which appeared weekly, is coming out fortnightly. The weekly journal the *Gazette Hebdomadaire des Sciences-Médicales de Bordeaux* has been temporarily suspended. The last issue, which is that of September, contains the index only for the thirty-six numbers which have appeared in 1939.

The *London Gazette* of November 10 announces the voluntary liquidation of the British Health Resorts Association, following a decision taken at an extraordinary meeting of the company held at 28, Portland Place, W.1, on October 25.

Owing to the arrival of a large number of refugees in certain areas the French Minister of Public Health has reorganized the health services under the following authorities: Bezançon (tuberculosis), Roussy (cancer), Couvelaire (maternity), Nolécourt and Lesné (protection of children), Lévy-Bing (venereal disease), and Dujarric de la Rivière (public health).

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

Moderate increases in the incidence of scarlet fever, diphtheria, and pneumonia were recorded for the week in England and Wales, but in Scotland, Northern Ireland, and Eire changes were only slight; in some instances decreases were noted. The notifications of measles and whooping-cough in the current week are not comparable to those in the previous week, when the figures only applied to part of the week.

Memorandum on Influenza

That the rise in the prevalence of pneumonia (primary and influenzal) is chiefly due to an increase in influenza is suggested by the increasing number of deaths ascribed to influenza in the last four weeks.

In February, 1919, during the great influenza pandemic which surpassed all its predecessors in severity, the Local Government Board drew up a memorandum on the prevention of influenza. A few months later the Local Government Board became merged in the newly created Ministry of Health, and in the following December the Ministry issued to sanitary authorities a revised version of the memorandum. Early in 1927 a third edition was prepared, and now a further revision has been undertaken.[1] In its present form the memorandum is shorter than its predecessors, and the text has largely been rewritten. It is timely in its appearance. General epidemiological observations on influenza and influenzal pneumonia are followed by diagnostic hints on its early recognition and differentiation from colds and febrile catarrhs and by suggested measures for prophylaxis and personal protection. Gargles and masks are regarded as of doubtful efficacy, and bacterial vaccines may be employed if there is known liability to attack or to pulmonary complications. No mention is made of the employment of the virus isolated by Andrewes and his co-workers in the preparation of prophylactic vaccine. The need for immediate isolation of patients in bed and the value of good nursing and medical care are properly stressed under the treatment section.

Memorandum on Typhoid

The Ministry of Health has also issued a memorandum on typhoid fever.[2] After a historical note matters connected with dissemination and modes of infection and control are discussed briefly but adequately. During the past fifteen years, in forty outbreaks of typhoid and paratyphoid fever in which there were definite grounds for a decision, the vehicle of infection was found to be water in eleven instances, milk in twelve, and other foods in seventeen. It is significant that none of the milks in the outbreaks in question had been pasteurized. Although gross sanitary defects are nowadays infrequent, the need for improvement in the methods of handling and distribution of milk and other foodstuffs, and for constant vigilance in water control, is evident. Specific immunization is only required for those particularly exposed to risk—for example, for those going abroad, or if the disease has been prevalent in a particular locality in this country and its source has remained unidentified. Detailed instructions are given for laboratory diagnosis of both cases and carriers by cultural and agglutination methods. The modification of the Widal reaction suggested by Felix, in which the blood is tested for Vi-antibody, is not yet regarded as a practicable procedure in routine diagnosis of cases or detection of carriers.

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[1] Ministry of Health Memorandum on Influenza. Memo. 2/Med. 1939. H.M. Stationery Office. (2d net.) (Revised edition.)

[2] Ministry of Health Memorandum on Typhoid Fever. Memo. 225/Med. 1939. H.M. Stationery Office. (2d. net.)

No. 45

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended November 11, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1938					1937 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	26	1	3	1	—	19	2	6	—	1
Deaths		—	1				1	2		
Diphtheria	967	16	244	40	24	1,445	141	291	92	28
Deaths	19	—	1	2	—	23	1	2	5	—
Dysentery	41	4	45		—	36	7	21		—
Deaths			1	—	—			—	—	—
Encephalitis lethargica, acute	6	—	1	—	—	5	—	1	—	—
Deaths		—	—				—	—		
Enteric (typhoid and paratyphoid) fever ..	17	1	6	4	—	29	15	3	5	2
Deaths	2	—	1	—	—	4	1	1	1	—
Erysipelas			71	14	6			67	5	5
Deaths		—	2				—	—		
Infective enteritis or diarrhoea under 2 years ..										
Deaths	38	5	15	8	2	39	8	10	3	3
Measles	1,146	7	6		26		25	32		—
Deaths	2	—	—	—	—	1	—	—	—	—
Ophthalmia neonatorum	71	5	25	2	—	103	12	34		—
Deaths										
Pneumonia, influenzal*	624	37	4	1	11	799	97	8	3	11
Deaths (from influenza)	41	3	2	—	1	28	1	6	3	1
Pneumonia, primary			148	13				367	11	
Deaths		7		10	5		12		15	10
Polio-encephalitis, acute	3	—				2	—			
Deaths		—					—			
Poliomyelitis, acute	16	1	2	1	1	51	3	2	1	—
Deaths		—	—				1	—		
Puerperal fever	3	3	3	5	1	1	1	20	3	1
Deaths		—					2†			
Puerperal pyrexia	169	13	23		2	168	15	25		—
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,465	36	237	96	106	1,887	170	435	69	108
Deaths	2	—	—	—	—	1	1	2	1	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	867	27	34		1		145	269		10
Deaths	5	—	2	—	—	13	2	3	—	—
Deaths (0-1 year)..	287	31	66	40	16	269	42	80	27	19
Infant mortality rate (per 1,000 live births)						44	34			
Deaths (excluding stillbirths)	4,992	791	660	222	131	4,237	781	586	195	123
Annual death rate (per 1,000 persons living)			13.4	14.9	11.5	10.4	9.9	11.9	13.2	10.9
Live births..	5,713	658	780	328	211	6,376	1,223	867	355	210
Annual rate per 1,000 persons living ..			15.8	22.0	18.5	15.7	15.6	17.7	24.0	18.6
Stillbirths	235	23	25			245	41			
Rate per 1,000 total births (including stillborn)			31			37	32			

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.
† Deaths from puerperal sepsis.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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The TELEGRAPHIC ADDRESSES are

EDITOR OF THE *BRITISH MEDICAL JOURNAL, Aitiology Westcent, London.*

SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the Office of the Cumann Doctúirí na h-Éireann (I.M.A. and B.M.A.), 95, Merrion Square, W., Dublin (telephone 62550 Dublin).

QUERIES AND ANSWERS

Parotid Swelling in an Infant

Mr. REGINALD T. PAYNE, M.S., F.R.C.S. (London, W.), writes: The history of Dr. Harper's case suggests that the infant has a mild pyogenic parotitis. I have seen many cases of parotitis starting in infants of a year or under, but never one which started in the first few weeks of life. Such cases are described, particularly secondary to thrush infection of the mouth. The evidence that thrush itself is actually responsible for the parotitis is unproven. In the cases which have been under my observation the parotitis has always been caused either by the *Streptococcus viridans* or by the pneumococcus. If in the case recorded either of the organisms is the causative one the prognosis is good as to life, but the patient is likely to have a troublesome parotitis with recurrent exacerbations. In the *Streptococcus viridans* group the exacerbations are likely to be mild, but in the pneumococcal group the exacerbations may be of a more acute and more serious nature, and may even pass on to the formation of intraglandular abscesses. Catheterization of the parotid duct is essential to confirm the bacteriological diagnosis, but this may be impossible in so small an infant.

Dr. A. N. M. DAVIDSON (Southport) writes: In your issue of November 18 (p. 1028) there appears a query by Dr. Colin H. Harper, Kenilworth, with reference to a small soft painless parotid swelling in an infant two and a half months old. Without seeing the swelling it is of course impossible to be certain, but the description is highly suggestive of what is known as a sucking pad. This is a small pad of fat occurring in the masseteric region, the object of which is to stiffen the cheek wall during suction. These pads are not at all uncommon. They are not to be regarded as an abnormality, and usually disappear spontaneously by the time the child has reached the age of 9 months.

Income Tax

Medical Students' Fees

"P. Q." has an income from a taxed trust fund. Can he claim any allowance for payment of fees as a medical student?

⁂ No. Expenses can be deducted only when they are incurred in creating the income. This is not the case, and in fact the fees are rather in the nature of capital expenditure to create an asset.

Allowable Expenses

"A. P." inquires with regard to the expenses mentioned below.

⁂ (*a*) Subscription to medical defence society—allowable. (*b*) Insurance of house property, ordinary insurance and against war damage—allowable so far as the insurance relates to the professional portion of the premises, equipment, etc. (Life assurance has, of course, special rules.) (*c*) Provision for "black-out" material for private house—allowable only as regards the professional rooms. (*d*) Provision of private air raid shelter—not allowable.

LETTERS, NOTES, ETC.

Fifty Years' Survival after Fractured Spine

Mr. ROBERT JACKSON, M.B., C.M., consulting surgeon to St. Helen's Hospital, sends a cutting from a local newspaper which records the death at the age of 82 of a man who fractured his spine when he was 34. Had he lived one day more he would have been a great-great-grandfather, a great-great-grandchild being born the day after his death. Mr. Jackson states that the patient fractured his spine on November 4, 1889, and that he applied a plaster jacket to the patient by the method described by him in the *British Medical Journal* of March 3, 1934 (p. 381). Death took place on October 25, 1939, within a few days of fifty years after the injury. In 1900 the patient commuted his claim against his employers for £25, and afterwards was employed for many years.

Leaflets for Child Care

Difficulties in reception areas have led the executive committee of the National Baby Week Council (29, Gordon Square, W.C.1) to produce two leaflets: *Think First of the Baby,* to meet the needs of mothers who may be contemplating return home and of householders who are tending to fail in a sympathetic interest in mothers and babies; and *Bed-wetting*—a disorder which has become very much more troublesome among children of all ages, particularly those who have left their homes. Simultaneously the Health and Cleanliness Council (Aldwych House, W.C.2) has issued a leaflet on the care of the hair (with special reference to the removal of vermin). All three leaflets, prepared by expert advisers, can be supplied free of charge to those interested in the care of children, on application to the addresses given.

"Foreign Pharmaceutical Products"

We are informed by Fassett and Johnson, Ltd., who distribute the goods of A. C. Barnes Company, that one of the latter's products —"argyrol"—is not a foreign product but is and has been for years manufactured in Canada. They state that there is no difficulty at all in obtaining supplies of argyrol brand of silver vitellin and that there are ample supplies in this country to meet all demands. Messrs. Fassett and Johnson, Ltd., state that their principals have for years pointed out that their argyrol brand of vitellin has no substitute, and that so far as they are aware there is no preparation which is similar or equivalent to it.

Dosage of Medicines

Dr. N. Z. KHAN (Calcutta) writes: The use of universally adapted Arabic notation instead of the Roman is urgently called for, considering that the same prescriptions have often got to convey fractional doses in Arabic figures and integral doses in Roman. This is a glaring inconsistency. Works on pharmacology and materia medica should be urged—rather, required—to give the average dose of medicine admissible in a given period of time and the total admissible in twenty-four hours, based on factors of assimilation, action, and elimination. To give dosage of such-and-such a drug in from so many to so many grains is irrational and unscientific.

Psychological Treatment Centres

Dr. J. L. BARFORD writes from the Mental Hospital, Ipswich: Is it not a sad reflection on the effect of modern "reform" in the treatment of the insane that your correspondent Dr. Allan A. Macdougall can write (November 18, p. 1020), "Let us save such people as we can from the *appalling fate* of ending their days in a mental hospital"! (italics mine).

Mustard Gas

Dr. E. T. LARKHAM (Birmingham) writes: To mitigate the ill effect of mustard gas and its like on the eyes immediate treatment is essential. Irrigation apparatus is rarely at hand, and in its absence a simple method is to open the eyes under clean water in a basin or bucket or under the water of a clean stream and move the head briskly from side to side.

Wanted—A Child for Adoption

Dr. E. W. DEWEY (Kingswear, London Road, Portsmouth) writes: A patient of mine is anxious to adopt a baby. I wonder if any of your readers know of any mother willing, or forced by circumstances, to part with hers. The child must be under 6 months and of good stock—not from the slums—preferably a girl. As my patient has to return to India in a few weeks the matter is of some urgency. I shall be glad if any medical man who knows of such a child available will communicate direct with me.

BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 9 1939

CARCINOMA OF THE STOMACH

BY

SIR JAMES WALTON, K.C.V.O., M.S., F.R.C.S.

Surgeon to the London Hospital

In spite of the general progress of surgery carcinoma of the stomach still remains one of the greatest of human tragedies. It occurs so often that it concerns us all, in whatever branch of medicine we may be working. In England approximately 15,000 people die of it annually—that is, about forty a day—while in the United States of America the number is approximately 38,000. Of all varieties of carcinomata it is one of the commonest, sharing this position with carcinoma of the breast and uterus. In men it forms about one-fourth of all varieties, and in women about one-sixth. In the surgery of the abdomen it accounts for approximately one-quarter of all operations upon the stomach.

Only too often it slowly and insidiously attacks those who have apparently been in perfect health, and it occurs at an age when its sufferers are looking forward to and preparing for a peaceful and happy enjoyment of their retiring years. The progress of its treatment has not kept pace with that of other gastric lesions, and only too often its recognition is the harbinger of a rapid and miserable end. Yet, as I shall hope to show you, some progress has been made and radical treatment has restored many hopeless sufferers to healthy and happy people.

Incidence

It has often been stated that the disease is on the increase, but of this I am doubtful. Owing to the more careful and complete methods of investigation fewer cases are overlooked, and with an increase of the total population, and especially with an increase of those who reach the cancer age, more cases are certain to occur; but in my own series of 572 patients there has been an average of thirty new cases per annum during the past ten years. The condition is most frequently seen between the ages of 50 and 60, but a large number occur in the decades immediately above and below this, and, as shown in Table I, may even be found between the ages of 20 and 30, and over 80. Cramer has found that the incidence steadily increases with age, and that the infrequency in the later periods of life is solely due to the fact that there are fewer people of advanced age.

TABLE I.—*Age Incidence*

Years	No.	Years	No.
20–29	5	60–69	163
30–39	51	70–79	20
40–49	113	80–89	1
50–59	219		
		Total	572

The male sex is more often attacked than the female. In my own series there were 398 males and 174 females—that is, 69.5 per cent. males—a preponderance which is rather less than that seen with peptic ulcers, where in a total of 2,143 cases there were 1,654 males and 489 females. It used to be generally believed that the majority of cases were primary and occurred in stomachs which were previously healthy, there being relatively few that were recognized as being dependent upon some previous organic lesion. These few are, however, of very considerable importance, for I know of nothing more depressing than to operate upon an irremovable carcinoma of the stomach which has followed a benign lesion of many years' standing, and to realize that if only adequate surgical treatment had been performed earlier the carcinoma would have been prevented. I cannot help feeling that the modern fashion of treating all peptic ulcers medically has led to many carcinomata being overlooked by those who have not had enough experience to make the differential diagnosis.

A small percentage are undoubtedly secondary to adenomata. These benign lesions are relatively uncommon and often do not produce symptoms. In my own series only six cases were found in over 3,000 operations upon the stomach. Stewart in his post-mortem investigation found about one in 200 necropsies. Of the 572 carcinomata in my series twenty-seven were accepted as having started in adenomata or were associated with them. Occasionally a severe haematemesis may have occurred in the past history, but as a rule this variety is insidious in its onset. The importance of their recognition lies in the fact that they may give rise to a very massive carcinoma situated on the greater curve of the stomach, which may cause a big palpable tumour that is considered to be inoperable. The condition, however, appears to be relatively benign, for at operation it may be found to be quite movable and to have led only to secondary deposits in the local glands. For this reason it is my custom never to regard a case as inoperable simply because of the size of the tumour.

Relation of Carcinoma to Gastric Ulcer

The question whether carcinomata may be secondary to a previous gastric ulcer has in the past led to a great deal of discussion, and even to-day there is no unanimity of opinion as to its frequency. The majority of workers, however, accept Stewart's figures as being approximately correct, and my own experience very largely agrees with his. He finds that about 9.5 per cent. of ulcers become carcinomatous; but this change is likely to occur in one in four of ulcers situated in the prepyloric area. About 17 per cent. of the carcinomata start in an ulcer. It is my own custom to exercise a very strict supervision over the classification of the types of carcinoma, and only to accept as starting in a previous ulcer those cases which fulfil the following four requirements: They must have had a history suggestive of a past ulcer; the test meal must show the presence of free hydrochloric acid, often above the normal; at operation the lesion must simulate a chronic ulcer; and the microscopical report must indicate that this was the nature and origin of the growth. With these criteria sixty-one of my 572 cases are grouped as having arisen in an ulcer—that is, 10.5 per cent. This is rather less than Stewart's 17 per cent., but of course it does not include any of the cases that are already inoperable, for in this group the pathological proof cannot be obtained. It is on this question of the pathological appearances that probably the greater number of the disagreements have arisen. For a case to be accepted the four pathological points which Newcomb has stressed should be present. They are: a complete destruction of the muscle in the base of the ulcer, the presence of much fibrosis in and around the base, the presence of surrounding endarteritis, and a fusion of the muscularis and muscle coats at the edge of the ulcer. Whatever be the exact frequency is not of practical importance, provided we all recognize the fact that an ulcer may become malignant, and that many cases of carcinoma may in their early stages give a history suggestive of an ulcer. For this latter reason the percentage of those cases primarily diagnosed as ulcers which later become malignant is higher than the figures I have already given. In my own series 112 of the cases gave an early history which suggested a chronic gastric ulcer, and I am sorry to say that in a considerable number of these medical treatment had been persisted in for so long that when the patient sought my advice the condition was already inoperable. It is in this group, relatively small though it is, that I feel progress can be made by a more careful attention to the clinical details and a recognition of those points which are suggestive of the presence of carcinoma. In this consideration an interesting point is the relation of carcinoma to the scars of healed ulcers, and, to us surgeons more especially, the relation to the scars of ulcers which have been healed by previous operation. If such a relation was relatively common it would be a strong argument in favour of the more routine use of radical operations in the treatment of peptic ulceration. My own series throws interesting light on this point. There were in all twenty-three cases which had followed a previous operation for ulcer (Table II). In four of these the ulcer was so big that a palliative operation had alone been performed, and the carcinoma followed shortly afterwards. There can be no doubt that in them the condition was already carcinomatous at the time of operation. The error was of course of no importance, for the ulcer was inoperable and would have remained so even if it had been known to be carcinomatous. In the second group (nine cases) the carcinoma occurred in some portion of the stomach remote from the site of the previous ulcer, and did not take place until many years afterwards. It is manifest that these cases had nothing to do with the primary lesion, and although it is true that a partial gastrectomy might have prevented the onset of carcinoma, this would have been no more justifiable an argument in favour of its employment than it would be to suggest that such an operation should be performed in normal people in order to prevent them getting carcinoma later on. The third group is that in which carcinoma occurred at the site of the ulcer many years afterwards, and probably could have been prevented if the ulcer had been excised at the time of the first operation. There were ten such cases in my own series.

Table II.—*Carcinoma after Operations for Ulcer*

Shortly after	4
Remote from ulcer ..	9 (4, 7, 7, 7, 14, 15, 17, 20, 25 years after)
Later in ulcer site ..	10 (3, 5, 5, 6, 6, 12, 14, 15, 21, 29 years after)

Probably one of the greatest advances in our knowledge of the aetiology of this disease lies in the recent conclusions of Sir Arthur Hurst. His investigations have produced very strong evidence to show that the cases which were previously regarded as primary are dependent upon a gastritis. He believes that the achlorhydria is caused by the gastritis and is not due to the growth, for he found that in every case of undoubted ulcer-cancer free hydrochloric acid was present; and when there was no evidence of such a previous ulcer the acid was usually absent, even in very early stages of the disease. He states that he has in his own series five cases in which the achlorhydria was present before the carcinoma developed, and that he has found record of twenty-two similar reported cases. He does not believe the acid falls after the onset of the growth. This latter point is of very considerable interest. I had previously believed that with the onset of carcinoma a gastritis might be set up and the acid diminish, but in my own series, in which test meals had been taken previously and had shown a fall with the onset of carcinoma, a gastro-enterostomy had been performed, and therefore these observations were of little value. It is true that Comfort has investigated a series of cases at the Mayo Clinic in which he seems to show that the acidity falls with the progress of the carcinoma, and that cases have been reported by Robertson and Wilkinson where there appeared to be a definite fall in the acidity in test meals taken before and after the onset of the carcinoma. The evidence which Hurst produces, however, is very strong, and he concludes that carcinoma never develops in a healthy stomach; but if a patient with a constitution predisposing to carcinoma also has achlorhydria and gastritis he will probably develop carcinoma, and Hurst holds out a strong hope that the early recognition and treatment of the gastritis may do much to diminish the frequency of carcinoma. He lays stress upon the interesting fact that although the incidence of carcinoma is much the same in all countries, yet in England only 22 per cent. of the cases occur in the stomach, whereas in Holland this percentage is 55. He believes that this difference is due to the greater incidence of gastritis in the latter country.

If the achlorhydria is the primary factor then we should expect to see cases of carcinoma occurring in patients who had had pernicious anaemia. It is of course only in recent years that the sufferers from this disease have been kept alive long enough for such a possibility to occur. Sir Arthur Hurst states that he has seen six cases of carcinoma of the stomach with pernicious anaemia, and that he has knowledge of twenty-four others which have been reported. In two cases he has seen the development of carcinoma after the pernicious anaemia had been cured. In my own series there have occurred two cases with pernicious anaemia. In one the anaemia arose seventeen years after an operation for gastric ulcer, and two years later carcinoma occurred. In the second case the patient had had pernicious anaemia in 1927, which had been treated and apparently cured, and in 1930 developed a carcinoma of the stomach.

It would be of little practical value in this discussion to consider in detail the pathological types of carcinomata which may be found in the stomach; but I may point out that the rare cases of sarcoma and lymphogranuloma, four examples of which occurred in my series, are clinically indistinguishable from carcinomata.

Symptoms

The main difficulty in the successful treatment of carcinoma of the stomach is that nearly two-thirds of the patients only seek surgical help after their disease has become inoperable. I wish I could say that this was due to the fact that errors of diagnosis had been made in the earlier period, for then one could hope that with a wider recognition of the symptoms more cases would be cured; but unfortunately in many the symptoms may have been present for only two or three weeks, but the condition is already inoperable when advice is first sought. There are, however, still some cases where the symptoms, in the earlier stages, are so indefinite or may so resemble a non-malignant tumour that they are overlooked for too long and are treated medically. It is these cases that we can hope to save by earlier surgical treatment. I am still confident that, even with the modern methods of investigation in use to-day, the greatest certainty of diagnosis lies in a careful investigation of the clinical history, and that sometimes indeed the more modern methods may lead one astray after a correct primary diagnosis has been made. The first point of importance, which has been so often stressed before but which cannot be too often reiterated, is that a gastric ulcer practically never starts after the age of 40, and that if a patient over the age of 40 with a clear past history comes up complaining of dyspepsia he *has* got a carcinoma of the stomach unless the contrary can be definitely proved. Moynihan's clinical classification is still of the greatest value. He pointed out that these cases may appear in three separate groups—namely, carcinoma of the cardiac orifice, of the pyloric orifice, and of the body—and that the latter, which is the biggest group, shows three methods of origin: those with a sudden onset, those with an insidious beginning, and those which are secondary to a peptic ulcer. The frequency of these types in my own series is shown in Table III.

TABLE III.—*Clinical Types*

Pyloric obstruction		216
Cardiac obstruction		46
Body: Sudden onset	29	
Insidious	16	310
Secondary to ulcer	112	
Total		572

It is well to remember that carcinoma of the cardiac or pyloric orifice will generally lead to obstruction, and that in either case the symptoms of the obstruction entirely mask the underlying cause. A patient with a carcinoma of the cardiac orifice will begin to develop symptoms of difficulty in swallowing. The history will usually be short and steadily progressive, the obstruction being marked at first only for solid food, but later increasing until there is difficulty even in the passage of fluids. Such cases do not as a rule cause much perplexity, for it is universally recognized that a rapidly increasing difficulty in swallowing in a patient over the age of 40 is generally due to a carcinoma either of the oesophagus itself or of the cardiac orifice of the stomach. Their recognition is, however, becoming of greater importance, for not only are they relatively common—in my own series there were forty-six cases at the cardiac orifice over and above the true cases of carcinoma of the oesophagus—but operations upon this type of growth, aiming at its radical removal, although at present tentative and somewhat experimental, are beginning to be more and more successful and are giving us hope that the intrathoracic or the combined abdomino-thoracic operation may lead to the cure of a considerable number of these unfortunate sufferers.

PYLORIC OBSTRUCTION

When leading to pyloric obstruction the individual symptoms of the obstruction are indistinguishable from those caused by a stenosing ulcer or by involvement of the pylorus from some lesion without, such as a chronic cholecystitis, chronic pancreatitis, or carcinoma of the head of the pancreas; but here again a careful consideration of past history should prevent the possibility of error. The short and steadily progressive history is the factor of chief import, and it must always be remembered that the onset of pyloric obstruction in a patient over the age of 40 is due to a mechanical cause, and must be treated by early operation. In the early stages the patient chiefly complains of a feeling of discomfort and distension, which increases as the day goes on, and is soon associated with a loss of appetite and with occasional vomiting. As the disease progresses the vomiting becomes more marked and takes on the projectile character. The vomit itself becomes large, generally occurs in the evening when the stomach has been filled, and the emptying of the stomach gives very considerable relief. The physical signs are often definite, and three stages of obstruction can be recognized. In the first the stomach is dilated and atonic, the atony being shown by the presence of splashing over the stomach. This may be obtained on physical examination, or the patient himself may complain of it during movements. The evidence of the dilatation can be heard but not seen or felt. As the condition progresses the stomach undergoes a certain amount of hypertrophy, and tends to contract upon the large mass of its contents. On physical examination its outline may generally be felt as a distended bag. Later still the hypertrophy is accompanied by peristaltic waves, which may be so forcible that they are readily visible through the abdominal wall, and the outline of movements of the stomach can then be seen. Such a degree of obstruction may be associated with a considerable amount of gastritis, and thus an absence of free HCl may be found in the test meal even if the obstruction is not carcinomatous; but in my own experience the fall in acid is never so early and never so marked with the benign lesions as with the carcinomata. An *x*-ray investigation may again disclose only the pyloric obstruction, for the barium meal may be unable to pass into the pyloric canal, and thus will not show the irregularity and filling defects due to the growth. In other words, all the methods of investigation will reveal only the presence of a pyloric obstruction, and will not indicate its nature. This will be indicated solely by the age of the patient, the shortness of the history, and the progressiveness of his symptoms.

SYMPTOMS IN THE BODY OF THE STOMACH

When the lesion is in the body of the stomach the symptoms may arise with a suddenness of onset which is very deceiving. Fortunately such cases are rare. In my own series there were twenty-nine examples. A few may occur with a perforation, but these are so rare that they are of little practical importance. In my series there were only two. Sometimes the onset is with a large haematemesis, and I have known several such patients who after the collapse from the haemorrhage had been treated for many weeks or months for a supposed ulcer, until the carcinoma was hopelessly inoperable. If it had only been realized that even a haematemesis occurring in a man over the age of 40 with a clear past history was most probably due to a carcinoma this mistake would have been avoided. The interesting variety is that in which a patient partakes of a meal which is perhaps for him of a rather unusual character. It is followed by a severe indigestion, which persists from that time, and when he seeks advice he will date the whole of the symptoms back to that one meal. The danger is that the condition may be regarded as one of food poisoning and the possibility of carcinoma be entirely overlooked. The fact that he has a constant gastric pain which is not relieved by vomiting, that his appetite is completely lost, and that he has no diarrhoea should arouse suspicion. If he is fortunate his vomit may contain a small amount of blood, and the underlying nature of the lesion be suspected early. Even if this does not occur an investigation of the vomit will generally show the presence of occult blood. A test meal will reveal the absence of free HCl, and the radiograph will generally show a filling defect.

The greater number in this group have a slow and insidious onset, and it is this variety which may be regarded as giving the most characteristic evidence of carcinoma of the stomach. The symptoms are variable. At times they are entirely extragastric, and the man may seek advice not for his indigestion but because he is cognizant of an increasing weakness and loss of energy. When questioned he will usually admit that he also has a loss of appetite and that he has a certain amount of discomfort after his food. From the time of the onset his symptoms are steadily progressive; his appetite will decrease, his discomfort after food may become more severe and is always continuous, so that although it may be made worse by the taking of food it does not entirely disappear before the next meal. At the same time he may complain of the eructation of foul gas or of quantities of foul and bitter fluid. Later true vomiting is added, but it does not give complete relief to the pain. There is often a visible anaemia, and loss of weight, although by no means characteristic, may be present. The persistence of such symptoms for two or three weeks should at once arouse the suspicion of carcinoma, and an investigation should be carried out. Visible blood may be present in the vomit or stools, but even if this is absent it will nearly always be found on chemical examination. I feel that here one ought to issue a word of warning. If occult blood is found in the stools it is often the custom to treat a patient medically for a supposed ulcer, and only to consider the question of carcinoma if the occult blood fails to disappear. This is a loss of very valuable time, and medical treatment should only be persisted in if there is strong positive evidence, either in the past history or in the other methods of investigation, of the presence of a gastric ulcer. If the history is suggestive of carcinoma it should not be continued. In many such cases the *x*-ray investigation will give positive evidence of the presence of carcinoma; unfortunately, indeed, it may in some cases give evidence that the growth is already past surgical treatment. On the other hand, in very early cases the evidence obtained by these means of investigation may be indefinite. In such cases gastroscopy may be of value. The blood should be investigated: a low haemoglobin content is not only suggestive but may have to be corrected before operation is considered.

GROWTH SECONDARY TO GASTRIC ULCER

Even in that type of growth which occurs secondarily to a gastric ulcer a consideration of the symptoms is of very great value. My own experience has been that a positive diagnosis can often be made by a consideration of the history of the clinical symptoms, even when an investigation by the *x* rays and the gastroscope is still uncertain. It is important to realize this—for, as I have already pointed out, there were in my own series 112 cases which presented the symptoms of a past gastric ulcer—and to remember that ulcers in the pyloric antrum are specially prone to become malignant. The changes first to be looked for are in the nature of the periodicity. The patient will so often himself state that the last attack is different from the previous ones: it is longer and the symptoms may be different; the pain is more continuous throughout the day, has not the same close relation to the ingestion of food, is less severe but more continuous. He will note that whereas in previous attacks his appetite has remained good, in this attack it has begun to fail, and it is an interesting thing to note that this may be quite definite, although he still has a high acid content in the test meal. Vomiting often becomes rather more frequent, although the vomits are small; but if it was present in the previous attacks the patient may note that whereas before it relieved his pain it has now ceased to do so. The presence of such a group of symptoms should at once raise the suspicion of the possibility of a carcinomatous change. Personally, I would regard them as a definite indication for operative treatment, and I should be but little inclined to waste further valuable time in making prolonged investigations of the stomach content and the stools or in *x*-ray or gastroscopic investigation.

In this variety, as in those with an insidious onset, a careful examination of the abdomen may reveal the presence of a tumour. Stress must here be laid on the fact that a careful inspection may often show a tumour which can be felt with difficulty, and that, generally speaking, the lighter the palpation of the abdomen the more will be felt within it.

ACCESSORY METHODS OF INVESTIGATION

Although the greatest reliance is to be placed upon the careful taking of the patient's history and upon his clinical investigation, there is no doubt that in difficult cases much help may be obtained by the accessory methods of investigation. The presence of occult blood in the stools and test meal is of very considerable importance, and there are many physicians who state that the persistence of occult blood is indicative of carcinoma. My only criticism of this is that if too much reliance is placed on this test alone valuable time may be wasted. The presence of achlorhydria is suggestive, but it may be found with a simple gastritis. A careful screening and *x*-ray examination is of the greatest value, but it must be undertaken by one who is skilled in this type of work. One or two simple films may be of absolutely no value, yet a careful screening and a careful investigation of the mucosal contours may show a minute lesion. Gastroscopy carried out by one skilled in its use may in a difficult case be of inestimable value, and this is especially so, I think, in those cases of gastric ulcer which are showing a very early carcinomatous change. By its use Mr. Hermon Taylor has enabled me to carry out radical operations in a few extremely early cases of carcinoma. Nevertheless I am frequently seeing cases reported in the literature where a positive diagnosis ought to have been made on the history, and valuable time has been lost in making several gastroscopic examinations.

Treatment

In considering the indications for surgical treatment one must ever remember that without such intervention the patient is condemned to death. In the present state of our knowledge there is no other measure which can be said to offer any hope, and although it is true that the majority of these patients are poor operative risks, and that any operation which hopes to be successful must be extensive, yet the majority will be only too willing to accept a chance, slender though it may be. My own practice is to advise operation in every case in which there is no evidence of secondary deposits. It is even a debatable point whether an operation should not be advised where there is a suspicion of only one secondary deposit. It may sometimes happen that a palliative removal of a primary growth, even when there is such a secondary deposit, may give a prolonged period of comfort and happiness. Even in doubtful cases an operation should be advocated, for not only may very large tumours prove to be removable, but should removal be impossible it is a solace to the relations as well as to the patient himself to know that no chance of a cure had been missed. Unfortunately even to-day the percentage of cases in which a radical removal is possible is still relatively small. In my own series of 572 cases such a removal was possible in only 224—that is, a percentage of 39.1. In spite of the attention which is now given to this disease, I still feel that it should be possible to improve on this figure. I have already laid stress upon the fact that many patients are already in the inoperable stage when they first seek advice, but I still meet a considerable number of patients who have had medical treatment carried out for too long a period, either because the condition had been mistaken for an ulcer or because it had not been realized that there was an organic lesion of the stomach. It is probable that if an operation had been performed a few months earlier the disease might have been radically cured. In this respect, however, it is satisfactory to know that there has been a steady improvement. In my first seven years only 28 per cent. of the cases were removable. In the second seven years this had increased to 35 per cent., and in the third seven years to 44 per cent. It is of course possible that with increasing experience on my part I am attempting the removal in many patients whom in the earlier years I should have condemned as inoperable; but nevertheless I do feel that in large measure this progress is due to increasing care and skill on the part of the general practitioner. It is still probable, however, that the operability rate will be improved with a wider appreciation of the fact that any dyspepsia starting in a patient over the age of 40 is carcinomatous unless a rapid and full investigation has eliminated this possibility.

I do not propose to discuss the technical details of the operative steps. It will suffice to say that after the abdomen has been opened a rapid survey must be made to determine the presence of secondary deposits in the pelvis, in the glands, in the liver, and by local spread to the surrounding tissues. If the condition is favourable the resection of the stomach must be as wide as possible, and it must include all the lymphatics in the areas which drain the stomach. So wide a removal is bound to carry with it a relatively high mortality, especially as many of these patients are elderly and are already in a poor state of health. The majority of the published statistics show that the operative mortality is in the neighbourhood of 30 per cent., and in my own series it was only just below this figure. It is as well to remember, however, that any operation on these patients is bound to be serious. In my own series there were fifty-seven cases in which an anterior gastro-enterostomy to relieve obstruction was alone possible, yet this relatively simple operation was associated with a mortality of 42 per cent.; and even those cases in which the only resort was an exploratory laparotomy carried with them a mortality of nearly 18 per cent. As regards the operation of gastro-enterostomy, it is well to point out that this should only be performed if there is a definite pyloric obstruction. It will give little or no relief to a fungating growth in the body of the stomach, and the very high mortality is due to the fact that the patients are such bad operative risks. It is therefore not justifiable to undertake it unless the greater part of the symptoms are obstructive in nature. In lesions which are situated at the cardiac orifice, and are associated with a difficulty in swallowing, a gastrostomy is a justifiable and often a helpful procedure, but it is doubtful whether it should be performed in patients in the poorer classes of life, to whom feeding through a gastrostomy orifice becomes a difficult and even impossible procedure. In many cases a partial gastrectomy may be the best palliative procedure. Even if secondaries are present the removal of the large mass of fungating growth in the cavity of the stomach may make the patient's life much more comfortable, and he may be able to live in happiness for many months or in some cases for several years. At one time I was hopeful that the implantation of radium after opening the abdomen, and after the removal of the main mass of the growth, might diminish the possibility of recurrence. I found, however, that it added considerably to the risk of the operation, and was sometimes followed by the formation of duodenal fistula. I therefore feel that it is a procedure which is of very little value.

Results of Treatment

Compared with the results of carcinoma elsewhere those obtained in treatment of carcinoma of the stomach are very disappointing. This is mainly due to the fact that in any big series so large a proportion of the cases are inoperable; but even in those in which the growth can be taken away one has to be content, owing to the anatomy, with a more local removal than would satisfy us in many other forms of carcinomata. As a general rule the growth spreads chiefly along the lesser curvature of the stomach, which is so short that even in our widest removals we are often only an inch or less beyond the margin of the growth. Increasing technical knowledge has led to wider resections, and not only can the greater part of the stomach be taken away but the glands around the coeliac axis and elsewhere can be more widely removed, with a greater chance of a more successful issue. At the same time such operations are likely to increase the mortality, and therefore there arises the apparent paradox that the greater the surgeon's experience is the higher his mortality is likely to be. In my own early series the operative mortality for resection was 26 per cent., but in my later series it has risen to just below 30 per cent. Nevertheless I feel that it is the surgeon's duty to carry out a resection wherever it is possible, but the patient should be most carefully prepared for the operation. A blood transfusion may also be required, but in my experience it is only of value if the haemoglobin is reduced; so that a blood examination should always be regarded as a necessary investigation before operation is undertaken. Because of the small proportion of cases in which a radical operation is possible, and because of the high mortality, there are still many physicians who advise against operative treatment, but I feel this is a wrong view. With an operability rate of only 40 per cent. and a 30 per cent. mortality, it means that twenty-eight patients in every hundred will survive operation and will have a good chance of remaining free of their disease. It is surely better to give 28 per cent. a chance of life and happiness than to condemn the whole hundred to a slow and lingering death. It is to the actual end-results of operation, however, that we must look for its value.

It is one of the tragedies of this disease that one is unable to say with certainty that a patient is cured, as the recurrence may occur at very late periods after operation. In fact, one can only say that he has been cured of his carcinoma when he has died of some disease unconnected with his gastric lesion. It is usual, however, in evaluating late results, not to regard any patient as permanently cured, but to consider those who have survived for a five-year interval without any evidence of recurrence.

Many of my more recent patients have recovered from their operation and are at present in a state of good health, eating well and with no gastric symptoms; and it is possible that a considerable number of these may ultimately pass the five-year period. In my own series the patients who have been operated upon for five or more years number 422 (Table IV). In 150 (35.5 per cent.) a radical operation was possible. Of the total, 111, or 26.3 per cent., survived the operation, but of these 111 only twenty-seven have remained free from recurrence for over five years. This seems a very small proportion of the whole, and indeed one must admit that such results are extremely disappointing; but when one remembers that up to a few years ago a carcinoma of the stomach was regarded as an inevitably fatal disease one has to agree that some progress has been made. Of the 422 patients who sought relief 6.4 per cent. are as the result of surgical operation alive and well after five or more years. Of those in whom a resection was possible—namely, 150—18 per cent. are alive and well, and of those who survived a partial gastrectomy 24.3 per cent. are alive and well. This perhaps brings out more clearly than any other statement the importance of straining every effort to operate upon these cases in the early stage, for earlier operation gives us the one hope of raising the 6.4 per cent. to 24.3 per cent. If one keeps constantly in mind the fact that a dyspepsia arising in a man over the age of 40 is probably due to carcinoma, and that an ulcer in the prepyloric region of the stomach is very prone to become carcinomatous, it is probable that a large number will be operable and have a chance of being restored to complete health. The end-results of these cases are perhaps best shown in Table V, where it will be seen that patients are alive and well for 24, 23, and 21 years after operation. But even this table does not give a true indication of the length of cure, for some of the patients were elderly and have died of conditions not connected with their gastric lesion. Two, for instance, died respectively at ten and eleven years after operation from lesions quite distinct from carcinoma of the stomach.

TABLE IV.—*Results of Operation*

	Total	Resections	Operative Survivals
All cases	572	224 (39.1%)	143 (25%)
5 years or more	422	150 (35.5%)	111 (26.3%)

Late Results

	Alive and Well	% of All Cases	% of Resections	% of Operative Survivals
All cases	45	7.8	21	31.4
5 years or more ..	27	6.4	18	24.3

TABLE V.—*Survival Periods*

Years	No.	Years	No.
5	8	14	1
6	1	17	1
7	5	21	1
8	1	23	1
9	3	24	1
10	3		
11	1	Total	27

We must conclude, therefore, that although the outlook is still bad despite the results of surgical intervention, yet the figures are improving, and that cancer of the stomach, which is otherwise bound to be fatal, can in a certain number of cases be cured by surgical operation.

LYMPHATIC LEUKAEMIA

THE VALUE OF STERNAL PUNCTURE IN THE DIAGNOSIS OF ATYPICAL CASES

BY

M. C. G. ISRAËLS, M.Sc., M.D., M.R.C.P.

Foulerton Research Fellow of the Royal Society

(From the Department of Clinical Investigation and Research, University and Royal Infirmary, Manchester)

In classical lymphatic leukaemia the blood picture shows diagnostic changes; a typical overwhelming lymphocytosis—50,000 to 500,000 white cells per c.mm., of which 90 per cent. or more are lymphocytes. The sternal marrow merely reflects these changes; it is very cellular, and 70 per cent. or more of the cells are lymphocytes. But often some of the clinical signs may be missing: Naegeli (1923) listed ten variations, and the lymphocytes of the blood may not be significantly increased. In these patients sternal puncture will often provide the clue to an otherwise open diagnosis. The following records give five examples of this type of case. Detailed figures of the blood and marrow counts are given in the table.

Table of Blood and Marrow Counts

Case No.:	I	II	III	IV	V
			Blood		
Red cells, millions per c.mm.	2.570	2.470	4.526	2.480	4.680
Haemoglobin, per cent...	56	45	93	54	84
Colour index	1.10	0.90	1.01	1.08	0.90
White cells, per c.mm. ..	11,500	6,800	9,800	3,200	12,400
Polymorphs, per cent. ..	8.0	34.0	17.5	30.0	19.5
Lymphocytes „ ..	91.5	63.5	75.0	64.0	77.5
Monocytes „ ..	0	2.5	7.0	5.5	2.0
Eosinophils „ ..	0.5	0	0	0.5	1.0
Basophils „ ..	0	0	0.5	0	0
			*Bone Marrow**		
Lymphocytes, per cent...	87.0	75.0	88.0	30.4	64.0
Lymphoblasts „ ..	1.2	0.8	0	22.0	0
Polymorphs „ ..	3.4	14.2	3.2	8.2	8.6
Metamyelocytes „ ..	0.8	0.2	0.6	1.2	4.2
Myelocytes „ ..	0.4	3.0	0.8	2.0	12.0
Normoblasts A „ ..	0	0	0	2.6	0.4
„ B „ ..	4.0	0.4	1.2	16.2	4.2
„ C „ ..	3.2	0.4	1.4	11.8	4.2
Pro-erythroblasts „ ..	0	0	0	0.6	0
Haemocytoblasts „ ..	0	0	4.8	4.4	2.2
Plasma cells „ ..	0	0	0	0	0.2
Monocytes „ ..	0	0	0	0.6	0

* The nomenclature of the marrow cells is that adopted by Israëls (1939a).

Case I

A married woman aged 40 had noticed a swelling in the left side of her abdomen for three months. During the same period she complained of increasing weakness, palpitation and dyspnoea on exertion, dizziness, and loss of weight. On examination she was very pale and some purpuric spots were seen on the shoulders and arms. The spleen was large and painful; the liver was not palpable. No enlarged lymph glands were found. The blood count showed a moderate anaemia and a definite lymphocytosis—11,500 white cells per c.mm., with 91.5 per cent. lymphocytes. The marrow was normally cellular, but 87 per cent. of the cells were lymphocytes. The patient was given iron and arsenic, and for three months her condition showed little change apart from slight improvement in the anaemia. During the next six weeks the white cell count rose gradually to 30,600 per c.mm., the differential count being unchanged. Radiotherapy was begun, but it was soon discontinued because, although the white cell count was reduced, the red cells were seriously diminished. From this time the anaemia became progressively worse, and petechial haemorrhages appeared on the shoulders and legs. The lymph glands in the axillae and neck became definitely enlarged. Eight months after her first attendance the anaemia was severe (950,000 red cells per c.mm.) and there were 7,400 white cells per c.mm., 97 per cent. of them lymphocytes. Her death was reported shortly afterwards; there was no necropsy.

Case II

A woman mantle-finisher aged 48 had been treated for "anaemia" for some months. About three months before admission she began to complain of abdominal discomfort after food; vomiting soon started, and the patient became very weak and exhausted. Abdominal distension appeared and steadily increased. Loss of weight was considerable. Examination showed a pale wasted woman with a large and distended abdomen. The spleen was very large, hard, and firm, moving on respiration. The liver was palpable 3 cm. below the right costal margin; it was smooth and firm. Small but firm lymph glands were palpable in the axillae and groins. There were no other noteworthy abnormalities. The Wassermann reaction was negative. The blood count showed a rather severe anaemia; white cells were 6,800 per c.mm., with 63.5 per cent. lymphocytes. The sternal marrow was very cellular, and contained 75 per cent. lymphocytes and 0.8 per cent. lymphoblasts.

Iron and arsenic was given and radiotherapy begun. But it was soon apparent that these measures would be ineffective. The anaemia rapidly increased and the patient died after six weeks in hospital. The leucocytes fell at the end to 2,600 per c.mm., with 75 per cent. lymphocytes. Post-mortem examination showed typical leukaemic changes in the lymph glands, spleen, liver, and elsewhere.

Case III

A painter aged 46 had noticed gradual swelling of the glands under the lower jaw for twelve months. He felt quite well and continued his work. No haemorrhages occurred and there was no loss of weight. His doctor, however, sent him to hospital for diagnosis of the glandular swelling. Examination showed a thin but healthy man. Below the jaw and extending parallel with the vertical rami on both sides were discrete, movable, painless glands of a fairly hard consistence. The axillary and inguinal glands were also palpable but not very large. The cervical lymph glands were not enlarged. In the abdomen neither the liver nor the spleen was palpable. The lungs showed normal air entry and the heart was of normal size. No other unusual features were found. The blood count showed no anaemia; there were 9,800 white cells per c.mm., 75 per cent. being lymphocytes. A gland was removed for histological examination. The normal architecture of the gland was found to have been replaced by an intense proliferation of lymphocytes. A radiograph of the chest showed no abnormalities in the lungs, heart, or mediastinum.

The patient was treated with iron. His condition remained stationary for six months, but the white cell count rose to 28,800 per c.mm., with 88 per cent. lymphocytes. The lymph glands around the jaw were now uncomfortably large, and radiotherapy was applied in an effort to reduce them. The results were not very satisfactory, but the white cell count fell to 8,600 per c.mm., 80 per cent. being lymphocytes.

Case IV

A platelayer aged 55 complained of lassitude, loss of weight, dyspnoea and palpitation on exertion, and headache, of two months' duration; increasing pallor had been noticed. Shortly before admission he had had ulceration of the gums, but these had not bled and were almost healed. Examination revealed a tall heavy man, notably pale. On the left lower buccal mucous membrane there was a healing ulcer about 1 cm. across. No haemorrhages were noticed. The splenic dullness was increased, but the spleen was not palpable. The liver was not enlarged and there were no enlarged lymph glands. Nothing of note was found in the heart, lungs, or central nervous system. The urine was normal. A fractional test meal showed hyperacidity. The Wassermann reaction was negative. The benzidine test for occult blood in the faeces was positive on two occasions. The blood count showed a moderate anaemia; the white cell count was 3,200 per c.mm., 64 per cent. being lymphocytes.

The sternal marrow was more cellular than usual; it contained 30.4 per cent. lymphocytes and 22 per cent. primitive-looking lymphoid cells, probably lymphoblasts; the normoblasts were active, and mitotic figures were seen in the early types; the granulocytes were greatly diminished and no mitoses were present.

The patient was treated with iron and arsenic, and the anaemia improved. Six months later, on his own initiative, three teeth were extracted, and there was severe haemorrhage. However, two months later he had recovered quite well and his haemoglobin was 64 per cent. Throughout the period of observation the white cell count remained low, but the percentage of lymphocytes rose slowly to 91.

Case V

A "make-up" man aged 58 had a sudden attack of severe pain in the left hypochondrium radiating to the left shoulder. Two further attacks occurred during the next week. For a fortnight he was off work and was then admitted to hospital. Apart from the loss of 8 lb. in six months there were no other symptoms. On examination the patient appeared well nourished but rather pale; the conjunctivae showed no pallor. The spleen was much enlarged, extending to the left iliac crest; it was firm and tender in some areas. The liver was also enlarged. The inguinal lymph glands were definitely enlarged, and there were numerous soft, discrete, but not very large glands palpable in the axillae. No other noteworthy points were observed. The Wassermann reaction was positive (1 in 4) in the blood but negative in the cerebrospinal fluid. The blood count showed a slight anaemia; white cells were 12,400 per c.mm., 77.5 per cent. of them lymphocytes. The marrow showed increased cellularity, 64 per cent. of the cells being lymphocytes.

In view of the positive Wassermann reaction treatment with mercurial inunctions and potassium iodide was given for a time in addition to iron. The anaemia improved and the spleen diminished slightly, but the lymph glands became a trifle larger. During the eight months the patient has been under observation his condition has remained stationary except for slow enlargement of the inguinal lymph glands. The blood count also remains stationary.

Discussion

The first diagnosis in these cases was not usually lymphatic leukaemia: splenic anaemia, Hodgkin's disease, or some other condition was suspected. My own experience, and that of other workers, shows that while lymphocytosis of the bone marrow—that is, 50 per cent. or more lymphocytes—is typical of lymphatic leukaemia, it is not usually present in other conditions involving lymphatic hyperplasia. In Hodgkin's disease no lymphocytosis was found by Nordenson (1935) or by Bodley Scott (1939), who quotes several other similar reports. Of seven cases of lymphosarcoma Hynes (1939) found the marrow normal in six, but there were 61 per cent. lymphatic cells in the remaining patient's marrow. In a series of over 100 patients I have found lymphocytosis of the marrow in only two conditions besides lymphatic leukaemia; these are glandular fever and aplastic-type anaemias. In glandular fever the lymphoid cells in the marrow are increased—in one patient there were 55 per cent.—but if these are discounted all the other normal varieties of cells are present in their normal proportions. In aplastic-type anaemia there may be a marrow lymphocytosis of 70 per cent. or more; but this is only relative, and the raised percentage of lymphocytes is due to the decrease of all the other marrow cells.

Patients similar to those described here have been reported by Nordenson (1935), Schulten (1937), and Storti (1937). There seems, therefore, to be little doubt that the finding of lymphocytosis of the bone marrow is strong evidence that the patient has lymphatic leukaemia.

Clinically the patients fall roughly into two groups: an acute group (Cases I and II) with a fairly rapid course to a fatal termination, and a chronic group (Cases III, IV, and V) whose clinical and haematological condition remains stationary for long periods. In the acute group radiotherapy seems to be of little value; in the chronic group radiotherapy can be advantageously withheld for a long time, and, as in the somewhat similar myeloid leukaemia patients (Israëls, 1939b), treatment can be restricted to normal anti-anaemic measures so long as no severe anaemia occurs.

Summary

In patients with lymphatic leukaemia the sternal marrow shows a lymphocytosis even when the clinical signs and the peripheral blood pictures are atypical.

This lymphocytosis is strong evidence for the diagnosis of lymphatic leukaemia, since it is not usually found in other conditions.

The clinical course and the treatment of these atypical cases are briefly discussed.

I am indebted to Dr. John F. Wilkinson and the other members of the honorary staff of the Manchester Royal Infirmary who have made available the facilities necessary for this work.

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Two new corporations have been established in Washington for the relief of war suffering in Great Britain and France. One body, the American Society for British Medical and Civilian Aid, will work for relief in Great Britain; the other, the American Society for French Medical and Civilian Aid, is designed primarily to provide funds for the American Hospital in Paris, which now has 500 beds. Funds for British aid, raised, as in the last war, by public subscription in the United States, will be converted into goods in America, and will then be dispatched, partly through the American Red Cross for military wounded and sick, and partly through the Personal Service League for civilian sick and wounded.

THE SPREAD OF RETROPERITONEAL EFFUSIONS ARISING IN THE RENAL REGIONS*

BY

G. A. G. MITCHELL, M.B., Ch.M.

(From the Department of Anatomy, University of Aberdeen)

Retroperitoneal effusions occur most commonly in the renal regions, and are the result usually of inflammation or trauma. The direction of spread of these accumulations depends on the arrangement of the fascia in the region, yet very few workers have ever attempted to determine accurately the fascial relations and attachments of the kidney. The really valuable contributions, such as those of Zuckerkandl (1883), Gerota (1895), Poirier (1907), and Southam (1922–3), can be counted on the fingers of one hand.

Experimental Investigations

In this investigation radiological methods were employed in addition to the usual anatomical procedures, and the observations are mainly based on the examination of twenty infants; many ordinary dissecting-room subjects have also been examined, though not by radiography. The method used was simple. A needle was inserted into the perinephric region through which a very fine barium emulsion was injected slowly under a pressure of about 75 to 100 mm. Hg. On an average each experiment occupied one and a half to two hours, and the spread of the emulsion was studied on the radiographic screen, plates being exposed at ten-minute intervals in most cases, or oftener if any interesting appearance was detected. After each experiment the specimens were dissected in order to determine accurately the position of the needle point and to establish that no barium had escaped into the peritoneal cavity, renal pelvis, or ureter. In twelve cases the needle point was in contact with the kidney or had penetrated or lacerated its surface, while in eight cases the point was in the paranephric fat behind the posterior layer of perirenal fascia. Seven experiments were failures and are not recorded.

The spread of the emulsion was remarkably constant. When the needle point lay close to the kidney in the perirenal space the barium emulsion, as shown by the shadow on the radiographic screen, soon assumed a more or less reniform appearance (Fig. 1), and it was established by subsequent dissection that the barium was outside the true renal capsule—between it and the perirenal fascia. At an early stage the space surrounding the suprarenal gland also became filled (Fig. 1), a graphic illustration of the fact that there is no complete fascial barrier, as some authors would have us believe, between the kidney and the suprarenal gland. Extension upwards was limited by the attachment of the perirenal fascia to the diaphragm, but the barium passed downwards, and to a lesser degree outwards, without any great difficulty. Sometimes there was an early spread downwards in the loose tissue around the ureter (Fig. 1), but more often the lower advancing edge of the barium covered a more extensive area. Laterally, as was established by dissection, the barium spread outwards to the level of fusion of the two layers of the perirenal fascia, but in a few cases the fusion was incomplete or the layers were readily disrupted, because the emulsion passed forwards for a variable distance between the transversus muscle and its fascia. Medially, strict localization to one side was a constant finding, the inner margin of the shadow being almost a straight line (Figs. 1 and 2). This unilateral spread was maintained until a late stage in the experiments, and then, often quite suddenly, a break-through occurred to the opposite side. This invariably took place in the lower lumbar region (Fig. 3). In five specimens no rupture occurred until the pressure was raised to over 200 mm. Hg, and in one case there was a break-through just below the diaphragm, but this did not happen until some time after the barium had broken through in the lower lumbar region. There was no indication of any tendency to spread upwards into the thorax through the various openings in and behind the diaphragm. Extension into the pelvis usually occurred with almost surprising ease in the loose retroperitoneal tissue, and in one case the barium passed downwards along the inguinal canal (Fig. 3). At first sight it appeared that the peritoneum must have been punctured and that the barium was distending a patent vaginal process, but dissection showed that the spread was in the extraperitoneal connective tissue and that the peritoneal sac was uncontaminated. In seven of the twelve cases in this group the barium spread *upwards* from the lower lumbar region around the inferior vena cava (Fig. 3), and it was curious and interesting to observe that in no case did the barium extend inwards alongside the renal or suprarenal vessels—an indication of the close attachment between the perirenal fascia and the adventitial coats of the vessels.

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* Read in the Section of Anatomy and Anthropology at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

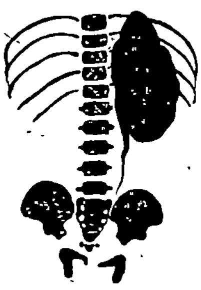

FIG. 1.

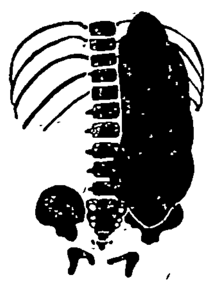

FIG. 2.

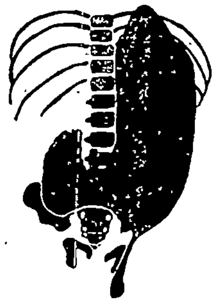

FIG. 3.

FIG. 1.—The barium emulsion has distended the space between the renal capsule and perirenal (renal) fascia. Note that the suprarenal compartment is also filled and that the barium has spread downwards in the loose periureteral tissue.

FIG. 2.—The barium has filled up the renal fossa and has spread downward to the pelvis. Note the strict unilateral localization, except in the lower lumbar region, where the break-through to the opposite side will occur.

FIG. 3.—The barium has broken through in the lower lumbar region and is extending upwards on the opposite side. Note the *upward* spread around the inferior vena cava, and the downward spread in the loose tissue surrounding a patent peritoneal vaginal process.

(These drawings are traced directly from the radiographs.)

When the needle point lay in the paranephric fat behind the posterior layer of perirenal fascia, the manner of spread was almost identical, except that diffusion appeared to be more rapid, the barium shadow did not outline the kidney and suprarenal, and there was no tendency to spread downwards along the ureter. The localization to one side was as distinct as before, and when extension to the opposite side occurred it did so in the lower lumbar region. There was still no invasion of the thorax, but there was less tendency to localization on the lateral side, the barium passing into the flank between the transversus muscle and transversalis fascia. Below, the barium passed between the iliacus fascia and muscle in several cases, and in one specimen it passed into the thigh postero-lateral to the femoral artery. The explanation of these results is to be found in the arrangement of the fascia.

Analysis of Results

Correlation of the experimental results with the appearances found on subsequent dissections has confirmed the general accuracy of Southam's observations, and it will be clear from the following brief description of the fascial arrangements why retroperitoneal effusions originating in the renal region should spread in the manner described above.

The kidney and suprarenal are surrounded by a loose investment of thinnish fascia, which is separated from the contained viscera by a variable amount of perinephric fat. This perirenal fascia consists of two layers: an anterior between the peritoneum and the renal capsule, and a posterior between the renal capsule and the fascia overlying the diaphragm, psoas major, quadratus lumborum, and transversus abdominis (Fig. 4). Poirier first cast doubts on the statement, still current in many textbooks, that the anterior layer extends across the front of the kidney and its vessels, to become continuous over the aorta and inferior vena cava with the corresponding layer of the opposite side, and he pointed out that perirenal suppuration remained localized to the side of origin, whereas it would spread readily to the opposite side if the anterior layers of perirenal fascia were continuous. He stated that the fascia can be traced as far as the pancreas and the root of the mesentery, there to become lost in the connective-tissue elements present in this situation, and Southam supports this statement. My experiments confirm the view that the two anterior layers are discontinuous, but they show that the anterior layers actually became attached to the bodies of the lumbar vertebrae and intervertebral disks a short distance in front of the attachment of the posterior layer of perirenal fascia (Fig. 4), and that this union is firm above but becomes progressively weaker as the lumbo-sacral junction is approached. The posterior layer is carried medially in front of the fascia covering the quadratus lumborum and psoas muscles, but separated from them by a variable amount of adipose tissue known as the paranephric fat. Near the mid-line, where the fatty tissue is less plentiful, the posterior layer merges with the psoas fascia, and also becomes attached to the sides of the lumbar vertebral bodies and intervertebral disks, immediately anterior to the origin of the psoas major (Fig. 4), but, like the anterior layer, the attachment is firmer above than below.

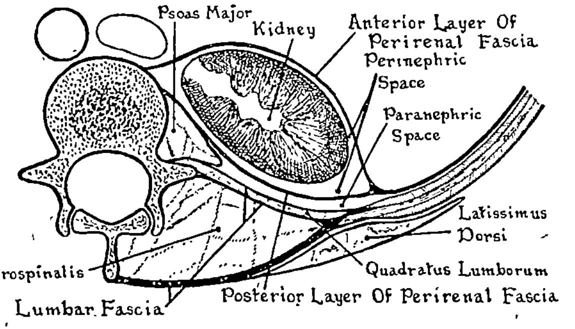

FIG. 4.—A transverse section to show the arrangement of the perirenal (renal) fascia and the perinephric and paranephric spaces. Note the attachment of the anterior layer of perirenal (renal) fascia to the bodies of the lumbar vertebrae.

Above, the perirenal fascia includes the suprarenal gland, a fact proved by the almost simultaneous filling of the renal and suprarenal loculi in the experiments (Fig. 5). This showed further that the fascial layer between the two organs is incomplete, or so tenuous in parts as to present no significant barrier to the spread of fluid. The anterior and posterior layers of perirenal fascia become fused above the suprarenal gland and gain attachment to the fascia on the under aspect of the diaphragm (Fig. 5), a union which is usually very firm, as Southam has emphasized. Laterally the two layers unite at a short distance from the outer renal margin, forming a vertical ribbon-like fascial condensation which merges with the transversalis fascia (Fig. 4). Southam states that this well-marked band is constantly present, but this is not so, either in infants or in adults; nor is the union laterally between the two layers always as firm as he asserts, for in some experiments the barium escaped without great difficulty from the perirenal pouch on the outer side. Inferiorly, as most writers state, the two layers remain discontinuous, the anterior gradually fading into the extraperitoneal tissue in the lumbo-sacral region, and the posterior blending with the iliacus fascia (Fig. 5).

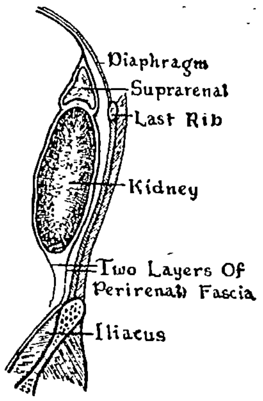

FIG. 5.—A sagittal section through the renal region showing the arrangement of the perirenal (renal) fascia.

Summary and Conclusions

A description is given of the spread of fluids: (*a*) from the perinephric space, included between the two layers of the perirenal fascia; and (*b*) from the paranephric space, lying between the posterior layer of perirenal fascia and the fascia overlying the muscles behind the kidney and the suprarenal gland.

The experiments detailed proved that there is no complete barrier separating renal and suprarenal fascial compartments.

It is shown that the spread is strictly limited to one side until a late stage, and that extension to the opposite side invariably occurs in the lower lumbar region.

Sometimes extension occurred downwards relatively early in the loose periureteral tissue, and invasion of the pelvis often took place with almost surprising ease. There was a tendency to *upward* spread along the lower part of the inferior vena cava, but no sign of invasion of the thorax through any opening in or behind the diaphragm.

The experiments proved that there is no continuity between the anterior layers of perirenal (renal) fascia on the two sides, and that these anterior layers, contrary to the usual description, gain a direct attachment to the lumbar vertebrae and intervertebral disks.

The experimental findings are correlated with those found at subsequent dissections, and a brief description of the arrangement of the fascia in the retroperitoneal regions is given.

I am indebted to Emeritus Professor A. Low and Professor R. D. Lockhart for permission to use the *x*-ray equipment in the anatomy department of Aberdeen University; and to Dr. Middleton Connon, radiologist to the department, for help in the interpretation of the skiagrams. The expenses of the investigation were defrayed by the Medical Research Council.

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ADVANTAGES AND DISADVANTAGES OF ENDOTRACHEAL ANAESTHESIA*

BY

ROSALIND M. P. MILNE, M.B., Ch.B., D.A.

AND

J. ROSS MACKENZIE, M.D., D.A.

Department of Anaesthetics, Medical School, University of Aberdeen

This is a subject with which anaesthetists are familiar. We cannot pretend to add anything new except our point of view. Endotracheal anaesthesia has had a vogue. Within recent times it might even be said that in some quarters it had become fashionable and was used where simpler methods might have been equally efficient. There are surgeons who welcome endotracheal anaesthesia even when it is far from essential. And there are surgeons who are content, and even prefer, to work amid difficulties to themselves and dangers to the patient rather than have intubation anaesthesia. Both enthusiasm and prejudice have long been equally powerful impediments to the progress of medical science.

We consider that the routine application of the same anaesthetic agent or the same method of its administration in a series of surgical cases without regard to the condition of the patient or the work of the surgeon is quite wrong and cannot be defended on scientific grounds. From the anaesthetist's point of view there is a definite group of surgical cases in which endotracheal anaesthesia is essential to the safety of the patient.

Advantages of Intubation

It is our intention merely to note some of the advantages that specially appeal to us in endotracheal anaesthesia. By means of intubation the anaesthetist is, once and for all, rid of the dead space of mouth and pharynx, as well as the essential factors in reflex respiratory spasm —the glottis and anoxaemia. As a result of intubation we have the perfect airway which is not affected by the mechanics of the dead space. Thus we have at all times absolute control of the depth of anaesthesia with the expenditure of a minimum of anaesthetic agent.

In the surgery of the upper abdomen and of the pelvis the advantages of intubation anaesthesia are often very conspicuous. The patient and the operation table, except the operation area, are completely covered with sterile sheets. The respiration is shallow and the recti are completely relaxed. The expenditure of energy by the patient is reduced to a minimum, and in prolonged operations, such as gastrectomies, splenectomies, and hysterectomies, strength can be maintained by artificial respiration with oxygen until transfusion of blood or gum saline has been accomplished. We are convinced that in prolonged and difficult operations with severe surgical shock and loss of blood many patients can be saved and others protected against a stormy convalescence by means of endotracheal anaesthesia.

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* Read in the Section of Pharmacology, Therapeutics, and Anaesthetics at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

In the repair of a cleft palate where a pharyngeal ridge has been prepared in an attempt to close the nasopharyngeal space from the oropharyngeal space during speech it is essential that an endotracheal tube should be passed through the glottis either before or after operation, and should be left *in situ* for twelve to twenty-four hours to tide the patient over the period in which acute oedema of the glottis may occur. Some cases have been lost on account of supervening oedema and others have been saved by an immediate tracheotomy. The presence of an endotracheal catheter in the glottis for twenty-four hours does not necessarily render the patient free from the danger of oedema of the glottis, but in the vast majority of cases in our experience this protection has been adequate. Intubation is the ideal type of anaesthesia for oral surgery, and with a gauze pack saturated with liquid paraffin forms an effective barrier against foreign bodies or septic material reaching trachea or bronchi.

In cardiac surgery generally, but particularly in such proceedings as cardio-omentopexy, intubation anaesthesia with differential pressure is a very great advantage to the patient and to the surgeon. A pressure of 10 mm. Hg is kept up until the phrenic nerve has been crushed, when the pressure is allowed to drop to 5 mm. Hg. This fall in pressure allows the paralysed leaf of the diaphragm to come into view. As soon as the omentum is coupled to the heart muscle and the incision in the diaphragm closed the intrapulmonary pressure is raised to 10 mm. Hg, and this pressure is maintained to the end of the operation.

In cervical sympathectomy where an accidental pneumothorax may occur, and in excision of the oesophagus, the use of some kind of intrapulmonary pressure is essential. It is a great advantage in such cases to be able to maintain positive intrapulmonary pressure for several hours after the patient has returned to bed. This can be done by means of a stream of oxygen through the endotracheal tube left *in situ*, and helps to prevent the very considerable risk of post-operative atelectasis. Intubation permits of a highly efficient method of artificial respiration in cases of sudden collapse on the operation table.

Disadvantages of Endotracheal Anaesthesia

Certain sequelae may occur as the result of the passage of a tube through the glottis into the trachea. Granulomata on the vocal cords are not very uncommon and have been reported by R. J. Clausen (1932) and by Blair Gould (1935). Tracheitis may result from a hard tube impingeing for a period on the same area of the tracheal mucous membrane, and this is aggravated by a constant stream of irritating anaesthetic vapour on this area. Laryngitis and tracheitis are apt to occur if for any reason the tracheal tube is left *in situ* for several hours after the operation. Trauma to the nasal passages as evidenced by haemorrhage followed by adhesions and scarring is not so very infrequent. Laryngitis with loss of voice in some degree arises in a number of cases, and instances have been reported by Dawkins (1936). Is there anything that we anaesthetists can do to prevent these complications? They occur more often in nasal than in oral intubations. Coughing and spasm of the glottis following the passage of a tracheal tube result in most cases from an insufficient depth of preliminary anaesthesia, local or general, and may cause damage to the glottis.

We are of the opinion that blind intubation should be done only in the rare cases where direct vision cannot be employed because of deformities of the neck, lips, tongue, teeth, or pharynx. Blind intubation was used in the majority of reported cases of trauma to the nose and of laryngitis and granulomata of the cords. We consider that blind intubation should never even be attempted if direct vision can be employed, because it is a haphazard method of performing an operation which can be done with precision. We are convinced that oral intubation is the route of choice even in cases of oral surgery, provided the tracheal tube does not seriously hamper the work of the surgeon, and that in nasal intubation the catheter should be picked up in the pharynx with a forceps and passed through the glottis under direct vision.

The tendency in the modern teaching hospital is for a still larger proportion of the surgical cases to be done under expert methods of anaesthesia. The demands of patient and surgeon for the anaesthetic agent and the method of its administration at once safest, most efficient, and least likely to disturb convalescence or in any degree to initiate post-anaesthetic complications are opposed to the claims of the undergraduate. It is essential that the medical student, in his own interests as well as those of the public, should be taught methods of efficient anaesthesia which require simple apparatus and portable agents. There can be no doubt that a considerable percentage of the anaesthetic mortality of to-day can be traced to the inexperience of the administrators. Neither the patient, the surgeon, the undergraduate, nor the science of anaesthetics need be wholly sacrificed. Our own practice (Mackenzie, 1932) has been as follows. If the condition of the patient or the nature of the operation demands expert methods of anaesthesia, then the undergraduate must not be considered; but a balance is struck in his favour in all surgical cases in which simple and portable agents, such as ether, or ethyl chloride and ether, or even chloroform, can be used with safety to the patient and comfort to the surgeon.

Reports of sequelae would appear to have deterred both anaesthetists and surgeons from subjecting their patients to endotracheal anaesthesia. An analysis of 1,253 cases of endotracheal anaesthesia with Magill's rebreathing tube at this school during the past eighteen months—1,103 in adults, 150 in infants and children—shows that convalescence is uniformly good and compares favourably with that following other methods of anaesthesia. None of the cases has exhibited any of the sequelae which have been reported.

We believe that certain precautions in the technique of administration will do much to prevent these sequelae. These precautions are: (1) Suitable length and bore of endotracheal tube for the individual patient. The tube must not reach near the bifurcation of the trachea lest it enter either bronchus, with consequent collapse of the other lung. The bore of the tube should be such that it will not be in constant contact with the vocal cords. (2) Lubrication of the endotracheal tube with sterile paraffin wax or with a 10 per cent. percaine base ointment.

(3) Application to the nose and pharynx of a 10 per cent. or 20 per cent. cocaine spray combined in equal parts with ephedrine. (4) Careful lubrication of nasal passages with sterile liquid paraffin. (5) Intubation to be done, apart from exceptional cases, by direct vision.

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A PLEA FOR BETTER ENDOSCOPIC TRAINING*

BY

G. EWART MARTIN, M.B., Ch.B., F.R.C.S.Ed.
Surgeon in Charge of the Ear, Nose, and Throat Department, Royal Infirmary, Edinburgh

Great advances have been made in the field of thoracic surgery within the last few years, and the operative risk is being reduced to a minimum. There is now a possibility of eradicating malignant disease of the lung, but operative measures must fail unless the disease is recognized early. The clinical diagnosis of primary carcinoma of the lung lies in the hands of the bronchoscopist.

For the last five years the records in the department under my charge in the Royal Infirmary, Edinburgh, and my own private records for the same period, include thirty-four cases of malignant disease of the lung diagnosed bronchoscopically, and of these one patient is alive over a period of two years and three over a period of one year. In every case the final diagnosis was made too late for operative intervention. The implantation of radium and radon seeds has been tried without success. *X*-ray therapy has as yet failed to cure, although it has in some cases retarded the progress of the disease. During the same period in the surgical and medical wards of the Royal Infirmary, Edinburgh, 182 cases (apart from those mentioned above) have been diagnosed as carcinoma of the bronchus, either clinically and radiologically or after a post-mortem examination. None of these was referred to the bronchoscopist for confirmation of the diagnosis. Operative intervention was not considered possible. *X*-ray treatment was tried in many cases without any cure.

It would seem either that there is a lack of co-operation between the physician and the bronchoscopist, or that patients are too late in reporting to the physician for treatment. Early symptoms may be overlooked, but if there is a suspicion of the presence of malignant disease reference should be made to the bronchoscopist for diagnosis. The physician in the past has tended to rely for confirmation on *x*-ray findings. A commencing carcinoma of the bronchus which could be revealed on bronchoscopic examination may show clinically only as an occasional haemoptysis and not at all on the *x*-ray film. To wait for a shadow on an *x*-ray plate before completing the diagnosis may be rendering operative eradication of the disease impossible. Thus the onus of early diagnosis rests with the bronchoscopist to whom the case is referred. Is our endoscopic training sufficient to justify this responsibility?

The Advance of Endoscopy

Twenty years ago the possibility of examining the inside of the lung was unknown to many. When Chevalier Jackson spoke at a meeting at Bath in 1925 only a few laryngologists possessed the necessary armamentarium for bronchoscopy and still fewer had the experience. The science of endoscopy has advanced rapidly. It is recognized by the physician as a definite practical means of diagnosis, but yet it seems that this form of diagnostic examination has not been developed on wide enough lines.

In America endoscopy has been established as a branch of laryngology, but has also been developed on lines apart from its mother specialty. There is a bronchoscopic clinic attached to a great many of the larger hospitals where cases can be referred for diagnosis and treatment. In this way operative training can be obtained, as well as the practical experience necessary for efficient diagnosis. Many from this country have taken advantage of the training offered in these clinics and have afterwards developed a specialty of bronchoscopy on their own lines, but always as a part of oto-laryngology. Cases referred for bronchoscopic examination have to take their turn with all the other cases of a busy oto-laryngological department.

Establishment of Central Endoscopic Clinics

Financially the establishment of similar clinics in this country is impossible until State medicine presents a Utopia where work would be the first consideration—the State supplying the means to live. It might be possible, however, for the several oto-laryngological departments, say in one town or in one area, to combine to form a central endoscopic clinic to which cases could be referred direct on specified days. This would allow of the segregation of the endoscopic from the purely oto-laryngological cases. More time could be given to these cases, and those working in that department would therefore gain more experience and obtain a better training. The necessary armamentarium could be enlarged instead of being so often a bare minimum, and special beds might be available.

A precedent for such clinics already exists in the formation of orthopaedic clinics and neurosurgical clinics in the department of surgery. In some centres thoracic surgery is being established as a specialty. There it might be possible to develop endoscopy and thoracic surgery side by side. The need for early and efficient diagnosis no longer allows of a place for the occasional bronchoscopist.

Unfortunately in this country we are unable to establish training centres such as exist in America and Paris, where operative technique can be taught on the cadaver and living animals, such as dogs. Here we can learn to pass the bronchoscope on the cadaver; but owing to various Home Office regulations we can only pass a bronchoscope on living animals under licence, using a general anaesthetic. If we employ a local anaesthetic we lay ourselves open to outside criticism, although it has been demonstrated that the bronchoscope can be passed without pain or harm to the living model.

There can be no doubt, however, that greater experience could be obtained and teaching be benefited if we had specialized centres instead of numerous small clinics. We have a great opportunity for the organization of endoscopic centres in the hospitals given over entirely to diseases of the chest (apart from phthisis). In these hospitals the physician carries out his own bronchoscopy as part of his routine examination. It must be remembered, however, that no bronchoscopy should be performed without thorough preliminary examination of the nose, nasopharynx, and larynx. The truth of this precept, which has been emphasized by Chevalier Jackson, has been borne out in my own experience. Many cases referred to my department as bronchiectasis have proved on examination to be chronic bronchitis with some dilatation of the bronchi secondary to a post-nasal discharge as the result of an ethmoid infection with nasal polypi, or an antral infection. The elimination of the cause has very often cleared up the chest condition without the necessity for endoscopy.

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* Read in opening a discussion in the Section of Oto-rhino-laryngology at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

The Practice of Bronchoscopy

Unfortunately there is a tendency in this country to consider bronchoscopy a difficult operation requiring the aid of a specialized anaesthesia, whereas it is a simple though specialized examination of the oesophagus and the lower air passages with a view to aiding the physician or thoracic surgeon as cystoscopy aids the abdominal surgeon. The operative field of bronchoscopy and oesophagoscopy is practically limited to the removal of tissue for pathological report and the removal of foreign bodies. The removal of a foreign body is attempted by many without much previous training, and yet all of us who have worked with Chevalier Jackson know that his removal of a foreign body from the bronchus in thirty seconds required hours of practice before the operation, to make certain that his eye, hands, and forceps were perfect.

This practice can be obtained quite effectively by the use of a mannikin in which one can reproduce the position of the foreign body seen in the radiograph and practise its effective removal. Fortunately, perhaps, in this country very few cases of foreign bodies in the bronchus occur. Why there should be this difference from other countries has never been explained, although it suggests that our diagnosis is incomplete—another plea for closer co-operation between physician, radiologist, and bronchoscopist.

Summary

To sum up, the need for earlier diagnosis of carcinoma of the bronchus must be recognized by everyone. In recent publications the thoracic surgeon has proved that mortality in chest surgery is almost negligible. The deep *x* ray therapist has to admit failure. In a few apparent cures the presence of malignant disease has been demonstrated by only *x* rays—the findings have never been histologically confirmed. In other words, the case has never been referred for endoscopic diagnosis. It would therefore appear that the bronchoscopist must give the initial and final diagnosis, and then, along with the radiologist, judge which cases might be referred to the thoracic surgeon with a hopeful operative prognosis. The need for training and for co-operation is very evident. Training and co-operation are impossible unless endoscopic cases can be centralized to special departments. Whether this department should remain under the specialty of laryngology or become a branch of thoracic surgery may yet have to be decided. Personally I cannot envisage an endoscopist who is not a trained laryngologist.

Ozaena.—According to Halász, ozaena is caused by lack of a "tonsillar hormone" which is similar to acetylcholine. A method of treatment is described.—Some New Data concerning Pathology and Treatment of Ozaena. H. G. Halász.—*J. Laryng.*, May, 1939, **54**, No. 5, 245.

Clinical Memoranda

Multiple Fractures without Patient's Knowledge

The following case is worthy of record as one in which multiple fractures of several long bones occurred without the knowledge of the patient.

CASE REPORT

A married woman aged 64 was admitted to the Buxton Clinic for Rheumatism and Allied Diseases on July 20, 1937. She gave a history of pain in the muscles of the back, the ribs, shoulders, and arms for about five years; the pain was always worse in winter. In August, 1936, she knocked her right leg, which became very swollen and painful; the diagnosis was inflammation of the bone. In 1914 she had a great deal of pain in the legs, and red blotches and lumps, which lasted for months, appeared. Apart from an operation for gastric ulcer in 1926 she had been healthy all her life. Her father, mother, and sister had suffered from rheumatism, but otherwise the family history was of no medical interest; she had had seven children.

When admitted she had been using crutches for six months, and complained of stiffness and pain in the arms, legs, and back; that lifting weights hurt her; and that slight knocks produced pain. On examination the movements of the joints were good; the right tibia was bowed, and there was deformity and unnatural mobility, accompanied by pain in the upper third of the right tibia. The bones and muscles of the left leg below the knee were very tender on palpation, the trochanter of the left femur was thickened and tender, and nodules were palpable on the left ulna and the ribs in the left axilla. Apart from some myocardial degeneration the circulatory system was normal. The blood pressure was 190/120. The sclerotics were not blue and there was no deafness.

X-ray examination revealed fractures, sometimes multiple, in most of the long bones: the right ulna had three fractures and the left a single one, the radii being intact but very porotic, with only a faint cortical outline; the right tibia and fibula showed fractures about six inches below the knee-joint which had united at an angle of about 160 degrees; the right fibula had also been fractured above the ankle. The left tibia showed a fracture below the knee-joint, and several fractures were observable in the middle and lower thirds of the fibula. There was a fracture in the neck of the right femur, while the left one was intact but porotic; the hip-joint spaces were slightly narrowed. The pelvis was malacic in type, with a flattened cavity and symmetrical fractures of the inferior rami of the ischii. The vertebrae were somewhat decalcified, but the joints were clear and there was no evidence of ligamentary calcification. The skull was normal.

The fractures had healed in most instances without the formation of the normal amount of callus, the union being apparently of a fibrous nature.

Laboratory Examinations.—Serum calcium, 9.1 mg. per 100 c.cm.; magnesium, 2.2; inorganic phosphorus, 3; phosphatase, 0.89 units (normal, under 0.25); icterus index, 2 units. Suspension stability after one hour, 89 per cent.; red cells, 4,900,000 per c.mm.; white cells, 7,700 per c.mm.; haemoglobin, 62 per cent.; colour index, 0.63; polymorph neutrophils 63 per cent., eosinophils 2 per cent., small lymphocytes 23 per cent., large lymphocytes 6 per cent., monocytes 6 per cent. Urine (twenty-four-hour sample): total nitrogen, 6.2 grammes; P_2O_5, 1.17 grammes; calcium, 0.103 gramme; magnesium, 0.084 gramme. No alkaline tide could be found, and the patient was therefore probably achlorhydric.

At the date of the examination the patient was not excreting an abnormal amount of calcium in the urine, and the Ca:P of the blood was not sufficiently subnormal to account for the malacic condition of the bones. It must be concluded that the activity of the disease process responsible for the osteomalacia had ceased, and no explanation of its aetiology can be suggested. The patient was placed on a diet rich in calcium and vitamins, supplemented with concentrates, and was kept at rest in bed. She was discharged on August 3, 1937, to her home, and advised to continue with a rich vitamin diet reinforced with A and C concentrates. On May 31, 1939, she reported that she was very well, had no pain, and could walk up and down stairs without help, although she used a crutch at times as a precautionary measure.

The condition was evidently an osteomalacia of unknown origin so active as to produce a bone picture indistinguishable from fragilitas ossium.

I am indebted to Dr. J. A. Harburn for permission to publish this record, and to Mr. J. Race, biochemist to the Devonshire Royal Hospital, who undertook the laboratory investigations.

Eleanor O'Donovan, L.M.S.S.A.Lond.,
Late House-physician, Buxton Clinic for Rheumatism and Allied Diseases.

A Case of Hydatid Disease

The incidence of hydatid disease is so rare in this country that the following case is worthy of notice.

Case Report

The patient, a man aged 72, consulted me in May, 1939, and stated that he had been "in poor health on and off for over thirty years." On interrogation he said that he had noticed the passage of small grape-like structures in the urine every spring and autumn since 1900, and that for the past two years he had suffered from periodic attacks of abdominal pain, unrelated to the intake of food and not relieved by any medicine or powder which he apparently had been in the habit of taking. Specimens of urine were submitted to the Clinical Research Association Ltd., and the following laboratory report, dated March 14, 1903, was obtained.

"The specimen received March 13, 1903, has been examined. The centrifugalized deposit from the urine contained traces of pus and blood, with a good many vesical squamae and a very small number of calcium oxalate crystals. The specimen contained in the urine was an entire hydatid cyst, and in the fluid within it both scolices and large numbers of the characteristic hooklets were found."

On August 8, 1939, the patient coughed up a tablespoonful of blood and complained of some dyspnoea on exertion; the left side of his chest was absolutely dull on percussion and the heart was so displaced to the right side that the apex beat was palpable in the right sixth intercostal space. From that date his dyspnoea gradually increased and he had occasional slight haemoptyses. Two months later he died, and a post-mortem examination was conducted by the county pathologist.

Pathological Report.—The left pleural cavity was full of semi-purulent fluid and contained a number of large lens-shaped hydatid cysts. Owing to the intrapleural pressure the left lung was completely collapsed and there was a purulent secretion in the bronchial tubes. The right kidney was hypertrophied but otherwise normal. The left kidney tissue had been replaced by a large number of hydatid cysts about the size of marbles; some contained cloudy fluid, some were full of caseous material, and a few were calcified. The left ureter was intact and, apart from some thickening of its walls, appeared normal. Two coils of small intestine were firmly adherent to the capsule of the left kidney, and were probably responsible for the spasms of abdominal pain from which the patient had suffered for two years. No other organ showed evidence of hydatid disease.

Wellington, Somerset. S. McClements, M.R.C.S.

Reviews

THYROID DISEASE

The Diagnosis and Treatment of Diseases of the Thyroid. By James H. Means, M.D., and Edward P. Richardson, M.D. (Pp. 367; 51 figures. 21s. net.) London: Oxford University Press. 1939.

The thyroid gland is sufficiently obvious to have given rise to comment through the ages both in medicine and in art. But there is no doubt that environmental conditions lead to much variety in manifestations of thyroid affections in different countries. Drs. Means and Richardson have collated the experiences of the Thyroid Clinic of the Massachusetts General Hospital on the patients under their care since the institution of the clinic in 1913, and at the same time have filled in the background of the various conditions of thyroid disease by a summary of present-day knowledge. It may be said at once that the case histories and personal experiences are of much greater value than the general comment, which often appears to be undigested. This may be because there is still much more to be known of thyroid disease.

Thyroid function in health is that of a catalytic process accelerating oxidative processes in all tissue cells, and increasing especially the nitrogenous, respiratory, and inorganic salt metabolism. The source of the thyroid hormone is not clear, and a purely pathological classification according to changes in parenchyma, colloid, or stroma is not yet attainable. Certain clinical entities in which these several changes may occur are recognizable, though there is a gradual transition from diffuse colloid goitre, adenomatous goitre, and exophthalmic goitre, so that there are many intermediate forms. It is perhaps too early to recognize one form of hyperthyroidism with partial advances and regressions; the authors do not attempt this synthesis.

After a general chapter on the principles of diagnosis and treatment of thyroid diseases, embracing notes on the anatomical relations of the gland and the methods of examination at the bedside, the various operative procedures and possible post-operative complications, the authors discuss systematically the types of enlargement and excessive or diminished activity of the gland. Colloid goitre is a common malady. Its most striking feature is its geographical distribution; in general the regions that are goitrous are geologically either mountainous or old glacial areas, though it may occur sporadically in non-goitrous districts. It is held to be associated with deficiency of iodine; but the lack of iodine is relative, not absolute, and may be brought about by infection. Symptoms are non-existent, but there may be associated over- or under-function of the thyroid, resulting in thyrotoxicosis or myxoedema.

The authors approach the subject of exophthalmic goitre from the clinical side, the diagnosis being usually apparent. A long discussion of the pathology follows but is without conclusion or value. They find that evidence in support of the pituitary hypothesis of exophthalmic goitre is negative: there is little reason to maintain that the pituitary is hyperfunctioning in ordinary cases of exophthalmic goitre. To English views the artificial separation of cases of exophthalmic goitre from toxic adenoma is not satisfactory, and the authors themselves comment on the intermediate cases. There is a distinct improvement in the firmness of writing and soundness of judgment in the authors' statement on treatment and the description of actual case histories. But the chapter on adenomatous goitre is unclear, including as it does the conditions we recognize as toxic adenoma or secondary thyrotoxicosis and the true adenoma, foetal adenoma, which can only be treated satisfactorily by surgery. And this chapter is separated from that on tumours, especially malignant tumours, of the thyroid by descriptions of myxoedema and cretinism. The book is therefore variable in its clarity and appeal, representing an individual attitude. This may have been aimed at as an expression of the opinions of the gifted workers at the Massachusetts General Hospital. Some of the authors' expressions are infelicitous, but these do not seriously detract from an honest attempt to clear the ground for what may in time be a useful description of thyroid diseases.

THE ORIGIN OF LIFE

Life's Beginning on the Earth. By R. Beutner, M.D., Ph.D. (Pp. 222; 80 figures. 12s. 6d. net.) London: Chapman and Hall. 1939.

After Wöhler in 1821 broke down the barrier between organic and inorganic chemistry, science took up the question, hitherto only answered by mythology, of the origin of life. The doctrine of spontaneous generation from putrefaction and fermentation had considerable support until overthrown by Pasteur, and even then lingered on into the eighties of last century. For a good many years after that, although the battle for and against vitalism continued to rage, both sides in that combat seemed to lose interest in the origin of life itself, so fully occupied were they in investigating its phenomena. Now that vitalism is in full retreat and biochemistry is rapidly advancing it is not surprising that the old problem is rising again in a new form. Dr. Beutner's book *Life's Beginning on the Earth* is an interesting contribution to the study of that problem, though the author does not seem quite to have made up his mind whether he is writing for a scientific or for a popular audience.

As he points out, the hypothesis that life was sprayed on to the earth by some passing meteorite is no solution, since it merely throws the question a step further back. He starts with a comparison between vital growth and crystallization, quoting some curious observations of Pfeiffer on the modifications produced in the shape of crystals by the addition of plant juice. Thus the addition of a single drop of an extract of water-lily to a solution of copper chloride causes the subsequent crystallization to imitate the shape of a water-lily. Evidently chemical influences help to determine the familiar shapes of living tissues and can be conveyed to lifeless material. Pfeiffer is now trying to apply this method to the recognition of the toxins formed in disease, but so far his deductions are decidedly speculative. Our author calls attention to many other interesting simulations of vital structures by dead matter, including the amoeboid movements of oil-drops. This merely shows that organic and inorganic material obey similar physical and chemical laws, and prepares the way for his thesis that crystallization is compatible with life, as demonstrated by W. M. Stanley's success (1935) in crystallizing the virus which produces the mosaic disease of the tobacco plant. Even if the crystallization of the virus is repeated ten times its activity in producing the disease is unimpaired. The outstanding property of living matter is the ability to grow and propagate itself in an environment different from itself, and a virus is capable of transforming its food material and of propagating itself so long as there is suitable food available. And yet it is a chemically pure substance, as evidenced by its capacity to adopt crystalline form. It acts like an unorganized enzyme, and is certainly not cellular. He thinks that this is the simplest thing which can be called alive, and that once such a self-regenerating enzyme has arisen the ordinary processes of differentiation by evolution could start. His suggestion as to the way in which such an enzyme originated from the substrate of carbon compounds formed during the cooling of the earth may strike us as highly speculative, for he invokes the aid of lightning, relying on Haber's work on the organic compounds formed by the passage of electric discharges through carbon-containing gases.

Dr. Beutner quotes Oparin's interesting speculations (1938) based on the reasonable assumption that as the boiling-points of carbon and heavy metals are extremely high they would be the first to solidify as the earth began to cool, with the formation of carbides. In the presence of overheated steam vapour interactions between carbides and steam would result in the production of enormous amounts of hydrocarbons. This, by the way, is a cheering thought, suggesting that we are by no means dependent merely on the coal-measures for our supplies of the mineral oils of which we are now so prodigal. The atmosphere of the earliest earth must have contained large amounts of ammonia, and this interacting with the primary carbon compounds would lead to the production of amino-acids, the basic constituents of protein. The chemistry sounds plausible, but we should like more evidence concerning the " vital spark."

PHOTOGRAPHY OF THE FUNDUS

Atlas Clinique d'Ophtalmoscopie Photographique. Syndromes Cliniques du Fond de l'Œil. By Henri Tillé and A. Couadau. (Pp. 194; 202 figures. 280 fr.) Paris: Masson et Cie. 1939.

There is something peculiarly attractive in an atlas of fundus drawings of the human eye. Many of these are real works of art, as well as treasures of observation and careful record. To mention only one of many of these atlases, that of Adams Frost might be taken as a perfect example of what can be done and has been done in this regard. These former atlases were full of pictures in colour reproduced by lithography or colour photography from drawings made by the observer. He looked into the eye with his ophthalmoscope and first drew outlines of what he saw as accurately as he could, and then coloured it to make it as nearly like the actual fundus as possible.

To-day a new fashion has come into vogue. Direct photography of the fundus is the aim. A fine atlas of such photographs has been published in France by Henri Tillé and A. Couadau. It contains no fewer than 202 figures—photographs of all sorts of fundus conditions. The skill of the photographers is shown in the size of the pictures, many of which measure six inches in diameter, and in all there is a complete absence of the white patches which were such a trouble in the early photographs. Every photograph has a clinical note of the case or of the condition, and the name of each is given in both French and English.

As an example of fundus photography this atlas represents a triumph of industry and skill on the part of its producers. But when we come to consider it as a record of fundus appearances it must be confessed that it is sadly disappointing. The photographic picture is as little like the appearance of the fundus as seen by the eye of the observer with an ophthalmoscope as a smoke-grimed cellar of a boiler-house is like the vivid picture of a sunlit landscape. In truth, the contrast is greater, for not only are the photographs in dull black printing-ink instead of in the real colours of the fundus, but there is in all of them an entire lack of that marvellous definition and clearness of outline and detail which are seen in most fundus observations—indeed, in all save those where the media of the eye are clouded. The photographs are blurred in outline and consequently convey a very poor impression of the real fundus appearances.

It is right to try to secure photographs of the fundus. If good photographs could be obtained they would allow of records being made at successive periods in cases where it is desirable or necessary to secure a greater accuracy of definition than can be presented by the artist. But for educational purposes, for teaching medical students what they should see with an ophthalmoscope, we doubt if photography will ever be able to compete with the work of the artist, and particularly with the work of the ophthalmic surgeon who is himself the artist. Nevertheless, we repeat that as an atlas of fundus photography this book is a great piece of work and is a credit to its authors.

A STUDY OF GESTURE

The Language of Gesture. By Macdonald Critchley, M.D., F.R.C.P. (Pp. 128. 5s. net.) London: Edward Arnold. 1939.

Dr. Macdonald Critchley has followed Bacon's injunction to study "The Doctrine of Gesture or the Motions of the Body with a view to their Interpretation." He has cast his net wide and collected information from differing ages and races, with some interesting results. He concludes that gesture can be broadly divided into two main groups. The first are symbolic, conventional, or empirical gestures which require interpretation; these are utilized for obvious reasons by members of secret brotherhoods, and in the language of religious symbolism. The second is composed of those signs which bear an obvious interpretation, age-old and universal; they constitute a silent *lingua franca* within the comprehension of all and can readily express emotion but not abstractions. They often need reinforcement by a number of empirical signs really belonging to the first category. Such a hybrid sign-language is found in the gestural systems of the deaf and dumb. Both these types, symbolic and instinctive, are of great antiquity, but the latter are more primitive and fundamental, often falling within the comprehension of animals, of young children before the acquisition of speech, and of mental defectives. Gesture, then, is a kind of italicized speech, while pantomime is silent acting.

On the way to these conclusions we are led along several pleasant by-ways, such as the distinction between voluntary though instinctive gestures and the involuntary emotional expressions of the autonomic nervous system, the relation of gesture to the origin of speech, and the evolution of drama from emotional expression in the dance, now sophisticated into the ballet. For the medical man perhaps the second of these topics has the most direct appeal, since he finds the speech centre so closely linked with that for the gestures of the right hand. The two hypotheses of the origin of speech were flippantly labelled by Max Müller the "bow-wow" and the "ding-dong." The first corresponds to the theory of onomatopoeia and the second to Sir Richard Paget's view that all speech is an elaboration of buccal-labio-lingual gesture. This approximates to the "yo-heave-ho" hypothesis, according to which speech is the outcome of man's muscular exertions in which the laryngeal muscles share. Dr. Critchley does not express any opinion on the theory that it is an early but temporary activity of an originally bilateral speech centre which accounts for the reduplicated syllables of a child's first verbal utterances—"da-da," "mam-ma," "nan-na." This finds expression later on not only in the "cocky-locky, henny-penny" tautology of nursery literature, but in a good deal that has recently been written presumably for adults.

STRUCTURE BY THE LIGHT OF FUNCTION

Anatomie Générale. Origines des Formes et des Structures Anatomiques. By H. Rouvière. (Pp. 192; 96 figures. 70 fr.) Paris: Masson et Cie. 1939.

The trend of this work on "general anatomy" and "the origin of form and anatomical structure" is, as these terms imply, the treatment of anatomy and development from the general standpoint rather than from the particular. Thus the structural details of any particular part are considered simply as illustrating general principles, such as the dependence of structure partly on heredity and partly on function and also the influence of physical and chemical factors. The author shows how development occurs by differentiation which is dependent on characters transmitted in the germ but which only become manifest at different stages in ontogeny. He demonstrates that differentiation of tissues or organs is usually in advance of the special functions which each tissue or organ will at a later stage of development be destined to perform. Thus muscle fibres and glands are developed before contraction or secretion occurs. With reference to these observations, he discusses the problem of how certain somatic changes induced by pressure or other causes have become inherited—for example, the sternal and pubic callosities of the ostrich, which are developed before the chick is hatched—or the orientation of the bony trabeculae, in the lower and inner part of the neck of the femur of young infants, in the same directions as in the adult; that is to say, following the lines of pressure and strain which the bone is subjected to in the adult, although in the young infant the bone is not yet subjected to these forces.

Professor Rouvière in successive chapters discusses such topics as the mechanisms by which bony ridges or depressions are produced; the articular expansions at the ends of a long bone; the arrangement of fibres in ligaments and tendons; the direction of muscle fibres, and the relation of tendinous intersections in muscles to their nerve supply; the reasons for the presence or absence of elastic fibres in ligamentous bands; the structural variations which exist in the walls of arteries, veins, and lymphatics, and the nature of fissuration and lobation of such organs as the lungs and liver and in the kidneys of certain animals.

The book is a philosophical treatise of great value; it gives a mechanical explanation and a precise meaning to many details of anatomical structure, and it should be read by all those who are interested in evolution and inheritance, and the correlation and dependence of structure on function.

Notes on Books

The Primer of Allergy, with its subtitle "A Guidebook for Those who Must Find their Way through the Mazes of this Strange and Tantalizing State," is intended for the patients, and not for the instruction, of the medical practitioner. But it differs from most publications designed for lay consumption in more respects than one. It is written by the author, Dr. WARREN T. VAUGHAN, of an exhaustive and serious treatise on the *Practice of Allergy* (reviewed in our issue of November 4); it came out at the same time as the professional work, and supplies in a light and bright dress the information given for the patient's guidance in the earlier editions of this treatise. It is indeed a rather unusual gift to be able to address two different audiences with equal success. The author has felt the want of such a book to hand to patients, and probably many medical practitioners will find their time can be saved by recommending this *Primer* to their allergic patients. It is published at 7s. 6d. by Henry Kimpton.

There are many excellent textbooks of gynaecology, and to justify its publication a new one should make some worth-while contribution to the subject. Written primarily for final-year students at Sydney, Dr. HERBERT H. SCHLINK'S *Gynaecology* (London and Sydney: Angus and Robertson; 32s. 6d.) records the teaching and practice at the Royal Prince Alfred Hospital, but contributes little that is new. Many excellent results are claimed, but the methods used are not always those generally adopted, as, for example, the performance of a Wertheim hysterectomy for carcinoma of the body of the uterus. A major criticism of the book is that alternative methods, even though widely practised elsewhere, are often not mentioned. Endocrinological aspects of the subject are for the most part not well discussed, and the author's experience of hormone therapy has been unfortunate. The need for a sound pathological background is well stressed, and throughout the book pathology is simply described and well illustrated, though on two occasions (Figs. 64, 65) the key to the illustration has been omitted. The chapter dealing with the examination of the patient and ethical problems is filled with excellent advice and may be compared to the pearl in the oyster.

Dr. RODERICK HEFFRON'S book on *Pneumonia* is the third of a series on the subject planned by the Massachusetts Pneumonia Study and Service conducted by the State Department of Public Health and financed by the Commonwealth Fund. What a monument of industry it is can be gathered from the facts that there are nearly a thousand pages of text and seventy-six pages of bibliography containing 1,471 references. It brings together a comprehensive review of investigations dealing with the inciting agent, the lesions produced, the clinical aspects, and the factors influencing prevention, prognosis, and treatment. The results of specific therapy in a large series of collected cases are a special feature of the book, and these details provide a useful guide to the practitioner embarking on that hitherto rather uncharted sea. Starting with pneumonia as found in Egyptian mummies and going on to the latest bacteriological findings and most recent views on anti-pneumococcic serum, it is difficult to believe that any single relevant fact can have been omitted. Happy the country that can provide the funds for such painstaking and meritorious research. The book is published in London by the Oxford University Press at 24s.

That Drs. L. E. H. WHITBY and C. J. C. BRITTON'S *Disorders of the Blood,* which originally came out in 1935, has already reached a third edition is convincing evidence that it is widely recognized as fully meeting the need for an up-to-date and authoritative work of reference on this rapidly advancing subject. Although it is only two years since the second edition appeared, a number of additions have now been made, especially on the haemolytic anaemias, technique, including that of sternal puncture, and the new pigment methaemalbumen. The publishers are J. and A. Churchill, and the price 21s.

In *Die Kreuzschmerzen der Frau: Ihre Deutung und Behandlung Gynäkologische Orthopädie,* Professor HEINRICH MARTIUS of the Göttingen University Women's Clinic contributes an interesting study of backache taken as a definite gynaecological entity. In the first half of his treatise he deals with the pathological causes in the pelvis; in the second and larger portion he treats it as an orthopaedic problem. Dr. Martius begins with an interesting and careful study of the finer anatomy of the pelvic organs, and shows that the sacrum has an abundant supply of spinal nerve receptors. The sympathetic and parasympathetic fibres, though only occasionally themselves conveying pain, can convey, via the plexuses, sensations of pressure or tension from the rectal or genital organs to the spinal nerves. Pain will be referred to the parametrium fixed over the sacrum, though possibly originating on one or other side. Apart from gross tumours and inflammatory lesions, the importance of correct diagnosis in order to secure correct treatment is insisted upon. That backache may be psychogenic is admitted—a bad conscience, a memory of injury, etc.—but the possibility of spasm of smaller muscle bundles such as that in the utero-sacral ligaments, or of the pyriformis, has to be remembered. Also varicosities within the pelvis, or even thromboses; and, of under-development, for which radiological treatment is advised. The author's main interest, however, lies in the orthostatics of the human female body, built for its great purpose of propagation; and he strives by bands and belts and exercises to correct the mistake of having assumed the upright position. The sketches of muscle and joint action are delicate and beautiful. There is much that is of use and value in the argument and teaching given. The publisher is Georg Thieme of Leipzig.

Preparations and Appliances

PLEURAL DRAINAGE TUBE

Mr. P. R. ALLISON, Ch.M., F.R.C.S., honorary assistant surgeon, the General Infirmary at Leeds, honorary surgeon, Leeds Public Dispensary and Hospital, writes:

The type of tube used for the draining of an empyema cavity must be chosen in each case according to the particular shape and size of the cavity. A tube which is useful when the cavity is first drained may have to be altered frequently during the course of healing. No one tube, therefore, can be recommended for general use, but the accompanying illustration (Fig. 1) shows a tube which has been made for me by the Genito-Urinary Manufacturing Company and one which I have found useful in selected cases. It is a simple form of self-retaining catheter with a prolongation of the tube beyond the flanged end. The flange is set at an angle to the shaft of the tube as shown. Holes can be cut in the distal part of the tube to suit individual cases.

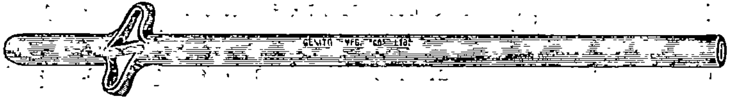

FIG. 1.

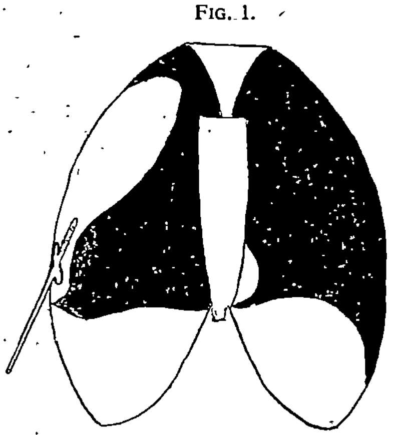

FIG. 2.—Illustrating use of tube in empyema cavity, which has healed more quickly at base than at apex.

I have used the tube particularly in the first week or fortnight after a lower lobe lobectomy, when the prolongated end helps to prevent the pleural cavity being shut off from the site of drainage by expansion of the upper lobe and elevation of the diaphragm. I have also used it in those cases of empyema where the basal part of the cavity heals more quickly than the apical part (Fig. 2) and where the more usual types of self-retaining tubes tend to become obstructed.

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NUTRITIVE VALUE OF RAW AND PASTEURIZED MILK

Five years ago the Milk Nutrition Committee planned a series of experiments to find out as definitely and as authoritatively as possible whether any real difference existed between the nutritive value of raw and of pasteurized milk. Three reports have already been issued. The first dealt mainly with observations on rats, and the third with observations on calves. The second was an interim report describing the effects of dietary supplements of raw and pasteurized milk on the growth and health of school children. The fourth and last report, which is just published, completes the second, and furnishes a summary of the results of all the experiments together with the conclusions to be drawn from them.[1]

The observations on school children were intended to provide not only a comparison of the relative values of raw and pasteurized milk but a justification of the milk-in-schools scheme. It was desired, in fact, to obtain some quantitative estimate of the beneficial effect of a milk supplement to the diet of growing children. Altogether 8,435 children, aged 5 to 14 years, distributed in five centres in England and Scotland, participated in the test. They were taken by classes and divided at random into four groups, the first of which received biscuits of very low nutritive value, the second one-third of a pint of pasteurized milk, the third two-thirds of a pint of pasteurized milk, and the fourth two-thirds of a pint of raw milk. The supplements were given during school hours for a year, excluding Saturdays, Sundays, and holidays. At the beginning, at the end, and twice in between, the children were examined medically by specially trained observers. The material for the present report was taken from 6,097 children who attended all four medical examinations, and from 695 who attended the first and second. Briefly, it was found that the milk supplements produced in both sexes, irrespective of age, increments in height, weight, and chest circumference greater than those which occurred in the control group on biscuits. These increases were greater in the groups receiving two-thirds of a pint of milk than in those receiving only one-third of a pint, but the absolute increases were very small. Thus in the boys the average increase in height of the two groups receiving two-thirds of a pint of milk over the biscuit group was only 0.089 inch, and in weight 0.584 lb., while in girls the corresponding figures were 0.088 inch and 0.913 lb. The growth-promoting power of the milk appeared to be exerted mainly in the early part of the test, and contrary to expectation was greater in children who were assessed clinically as above the average than in those who were poorly nourished at the start. Assessment of the posture, the complexion, and the condition of the tonsils, the conjunctivae, and the eyes yielded irregular results, there being a downward shift during the course of the experiment. The committee attributes this to an alteration in the standard of the medical observers. On the other hand, they attach significance to an almost equally subjective test—namely, the general state of nutrition, which was found to rise in the groups receiving milk to a greater extent than in the group on biscuits. Similar weight is given to the greater increase in intellectual capacity among the milk groups during the course of the year as estimated by the teachers. What exactly is meant by intellectual capacity it is difficult to say. If the expression refers to innate intelligence, which is doubtful, it should have been possible to measure it by proper intelligence tests. If mere increase in mental alertness and animal spirits is intended, then the subjective element in assessment comes in again, particularly when it is realized that the teachers, unlike the medical examiners, knew to which group the individual children belonged. On the whole, the results of these various subjective tests are difficult to interpret, and too much stress should probably not be laid on the committee's conclusions.

So far as a comparison of raw and pasteurized milk is concerned, no constant differences could be detected between the growth-promoting effects of the two-thirds of a pint of raw and two-thirds of a pint of pasteurized milk in either height, weight, or chest circumference. The only constant difference that could be established was in muscular strength, as estimated by the dynamometer test, and this was in favour of pasteurized milk. The differences, though uniformly in the same direction, were small, and could not be considered statistically significant. The general conclusions to be drawn from the feeding test on children are that milk has a stimulating effect on growth, and that there is no detectable difference in this respect between raw and pasteurized milk.

Summarizing the experiments on rats, the committee draws the following conclusions. Commercial pasteurization did not affect the total nutritive value of the milk or the availability or nutritive value of the protein, calcium, or phosphorus; it reduced the vitamin C content of the milk by about 20 per cent. and the B complex—presumably the B_1 fraction—slightly, but did not alter the content of vitamin A or of its precursor, carotene. The effect on vitamin D was not tested, but as this vitamin is known to be very resistant to heat it may be presumed that it is not affected by pasteurization. The fall in vitamin-C content occurs only, it will be remembered, when the milk has been previously exposed to light. Pasteurization of milk drawn into and kept in opaque vessels free from copper has no effect on vitamin C. The calf-feeding experiments again failed to reveal any significant difference between the nutritive value of raw and pasteurized milk. In relation to the observations on children and calves, it may be argued that there were defects in the pasteurized milk, but that they were neutralized by other foods. The committee's answer to this is that it is not small defects which are important but only those which become manifest under strictly practical conditions. Such defects might be of importance in infants fed purely on cows' milk, but since cows' milk is not a perfect food for infants it is usual now to add iron and vitamin C, even when the milk is given raw. Since the best way of giving iron is in the form of egg-yolk, and since egg-yolk contains in addition vitamin A, carotene, vitamins B_1, B_2 complex, and D, any slight defects in pasteurized milk which might exist would almost certainly be neutralized by this means.

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[1] *Milk and Nutrition: New Experiments Reported to the Milk Nutrition Committee.* Part IV. Price 2s., post free, from the National Institute for Research in Dairying, Shinfield, Reading.

The main result, therefore, of the research work carried out during the past five years by the Milk Nutrition Committee on rats, calves, and children is to show that milk has a stimulating effect on growth and that no detrimental effect of any practical importance is brought about by holder pasteurization. The conclusions of such an authoritative body, taken in conjunction with similar conclusions reached by other independent workers in different parts of the country, will, it is hoped, dispose once for all of the erroneous statement that pasteurization destroys the nutritive value of milk. At a time such as the present, when large numbers of children who have been brought up on pasteurized milk in our large towns are now being fed on raw infected milk in the country districts, the importance of safeguarding their health by adequate heat treatment of the milk cannot be too strongly emphasized. Medical officers who have hitherto hesitated to introduce pasteurized supplies from the neighbouring towns on account of a lingering fear that the nutritive quality of the milk was less than that of raw milk may take courage from the fact that such a fear is entirely without scientific foundation.

RECENT WORK ON VITAMIN C

Research on the physiological action of ascorbic acid and on the daily requirement by the human being continues. In the past there has been much contradictory evidence on the reserve of vitamin C in the human foetus and placenta. According to the latest work of Muller[1] on fourteen animals (cow, pig, horse, man) the vitamin-C content of the liver of the foetus was, with one exception, equal to that of the liver and placenta of the mother. There was no evidence of a synthesis of vitamin C in the foetus, which received it from the blood stream through the placenta. Winkler[2] has found in rabbits a fluctuation in the amount of ascorbic acid excreted daily during the first few days of pregnancy, a steady slow rise till the fourteenth day, and then a more rapid decline till the day before parturition, when the amount excreted rose; on that day and on the day of parturition it was very large indeed. On the succeeding days it fell to normal level. Winkler concluded that the ascorbic acid was retained as an activator of the hormones needed during pregnancy, and when no longer required for this purpose it was excreted. Snelling and Jackson[3] have demonstrated a slight fall in the ascorbic-acid content of blood plasma towards the end of pregnancy, and a higher content of ascorbic acid in the foetal blood than in the maternal blood just before parturition. They advise giving extra vitamin C to a breast-fed infant if the mother's milk does not contain at least 2 mg. per 100 c.cm. A level of ascorbic acid lower in prematurely born than in full-term newborn infants was observed by Steinebrei,[4] but whether this was normal for such infants or slightly pathological he did not know. The mothers of the infants examined were almost all from the peasant class. Examining the vitamin-C content of different regions of the brain Diehl and Neumann[5] discovered that the parts with the lowest vitamin-C content were those having no direct relation to the vegetative functions—for example, the cerebrum, cerebellum, and corpus callosum. On the other hand, vital centres contain a large store of vitamin C. That these differences were not found in the brains of infants is understandable when it is realized that at birth the vegetative centres are already fully developed, whereas the "higher" centres do not mature until later.

All growing tissues require large supplies of vitamin C. Diehl and Kirchmann[6] observed that the rise in blood sugar of a patient taking 100 grammes of glucose by mouth was greater after high dosage with vitamins B and C than after no vitamin therapy. They believe that the water-soluble vitamins are necessary for the normal functioning of the glands of internal secretion. Injections of large amounts of vitamin C followed by smaller daily doses were found by Papayanopulos and Schroeder[7] to produce a rise in the thrombocyte count up to 450,000 and 530,000 per 100 c.cm. of blood in two patients. They believe, however, that this is due to a stimulation of the bone marrow and not to the "vitamin character" of the ascorbic acid. Reporting the beneficial effects of big doses of vitamin C on patients suffering from lead poisoning Holmes, Amberg, and Campbell[8] consider that it unites with the toxic lead ions to form a poorly ionized and much less toxic compound which is probably absorbed by the liver and passed into the bile, for it is found in the faeces, as is the lead compound formed during "de-leading" with potassium iodide. It has been claimed that large amounts of ascorbic acid lessen the anaphylactic shock resulting from the injection of antitoxic sera into susceptible persons, but Szirmai[9] has been unable to confirm this. He injected 0.1 c.cm. of solutions of 50 to 150 mg. of ascorbic acid in 1 c.cm. horse serum into sensitized animals. The effect of this was not different from that of horse serum alone. Meyer[10] has extracted ascorbic acid from human and ox tonsils and identified it by its melting-point, crystalline form, and two microchemical reactions. The amount in the tonsils was raised by giving large doses of the vitamin, and Meyer claims that it stops the growth of pneumococci and streptococci and apparently raises the phagocytosis value of human blood. It is therefore one of the factors necessary for resisting infection. According to Zacko[11] the capillary resistance of the skin of scorbutic guinea-pigs was nearly restored to its normal level by ascorbic acid and completely restored by citrin. Intestinal haemorrhages disappeared when citrin was added to the diet, but it did not prevent the death of scorbutic guinea-pigs, nor did it make them live any longer than the negative controls. His citrin was prepared from rose-hips.

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[1] *Klin. Wschr.*, 1939, **18**, 299.

[2] *Klin. Wschr.*, 1939, **18**, 372.

[3] *J. Pediat.*, 1939, **14**, 447.

[4] *Klin. Wschr.*, 1939, **18**, 489.

[5] Ibid., 418.

[6] Ibid., 422.

[7] Ibid., 428.

An average ascorbic-acid content of the blood serum of 0.22 mg. per 100 c.cm. of blood in the spring and 0.9 mg. in the summer was found in 326 healthy persons by Dagulf.[12] In the spring 94 per cent. of his subjects had less than 0.5 mg., the amount usually regarded as necessary for health. He concluded that the figure 0.5 mg. per 100 c.cm. of blood is too high for the Swedish people and probably also for the whole of the Scandinavian population. Of 255 tuberculous patients whom he examined and whose vitamin-C intake during the greater part of the year was not over 30 mg. per man per day, the average was 0.1 mg. per 100 c.cm. of blood in the spring and 0.47 mg. in the summer. Yet during the last twenty-five years the mortality rate from tuberculosis in Sweden has dropped 50 per cent. Neuweiler[13] has concluded from many examinations that 30 to 35 mg., or preferably 50 mg., of ascorbic acid should be taken daily by the healthy adult, but in special circumstances—for example, sickness and pregnancy—this should be increased to 60 to 70 mg. He also believes that the other constituents of the diet—for example, fatty acids and vitamin D—influence the amount of vitamin C required. Goldsmith and Ellinger[14] consider that the renal threshold value of reduced ascorbic acid is 1.4 mg. per 100 c.cm. of blood. They suggest that the significance of a partial depletion of the ascorbic-acid content of the body in disease should not be overrated, as mild vitamin-C deficiency is extremely prevalent in apparently healthy individuals. Stepp and Schroeder[15] contend that individuals vary greatly in their requirements for vitamin C, and that the higher the metabolism (as in growth, exercise, and pregnancy) the more is the need for the vitamin. According to these workers the amount necessary to keep a person in really robust health is very much greater than that for the prevention of signs of avitaminosis, and they think that an intake of as much as 300 mg. ascorbic acid a day is desirable. Thus all evidence tends to show that it is almost impossible to take too much ascorbic acid and that there is a real danger in taking too little.

THE CLEANSING OF WOUNDS

There is an unsatisfactory lack of uniformity in the methods employed for preventing wound infection. This applies as much to methods for clean operation wounds as to those employed in accidental injuries presumed to be infected. Not only are many different reagents used for pre-operative disinfection of skin, but proposals have recently been made for protecting the wound against contamination from sources other than the patient's skin during the course of the operation. We have referred previously[16] to Hart's device for irradiating the field of operation with ultra-violet light. This method is based on the assumption that post-operative suppuration in what should be clean wounds is due to their contamination by staphylococci from the air, these staphylococci being supposed to originate in the throats of the theatre staff. Apparently quite inconsistent with this hypothesis were the results of very detailed observations by Devenish and Miles,[17] who not only found that the numbers and rate of deposition of pathogenic staphylococci in the air of an operating theatre were so small as to constitute an almost negligible risk, but showed that an admittedly exceptional series of post-operative wound infections was due to contamination from the surgeon's hands through minute glove perforations. Another much simpler proposal[18] for obviating this risk is now made by R. H. Jackson and R. H. Jackson, jun., who also take it for granted that the air is the source of these infections, and, indeed, present some evidence of their own to this effect, obtained by suspending open plates of culture media above the field of operation: these yielded growth including staphylococci and haemolytic streptococci after three hours' exposure, but neither counts nor further species identification were attempted. The procedure advocated by these authors is simple cleansing of the wound with soap and water before closure. They argue that fragments of blood-clot and fibrinous exudate in a wound "catch and hold bacteria and dust as would fly-paper," and that the mere mechanical removal of these possible foci of bacterial growth is all that is needed. Rough bacterial counts of washings before and after the process appear to show that nine-tenths of the bacteria in the wound are in fact removed. The soap used is said to have little germicidal action, a somewhat surprising fact in view of the known capacity of soap for killing bacteria, particularly the pyogenic cocci. In the authors' hands this method has reduced the frequency of post-operative wound infection from 4 per cent. and often much more almost to *nil*. Its simplicity is certainly a great advantage, and it might well be given a trial in accidental as well as operative wounds. The possible merits of the method are unaffected by any view which may be taken of the usual source of bacteria in operation wounds, but these authors' sweeping statement that "the air of every operating room is practically always badly contaminated with staphylococci and streptococci" can fortunately not be accepted.

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[8] *Science*, 1939, **89**, 322.

[9] *Arch. Kinderheilk.*, 1939, **117**, 56.

[10] *Klin. Wschr.*, 1939, **18**, 704.

[11] *Acta path. microbiol. scand.*, 1939, **16**, 144.

[12] *Klin. Wschr.*, 1939, **18**, 669.

[13] Ibid., 769.

[14] *Arch. intern. Med.*, 1939, **63**, 531

[15] *Klin. Wschr.*, 1939, **18**, 414.

[16] *British Medical Journal*, 1937, **2**, 709; 1939, **1**, 396; 1939, **2**, 733.

[17] *Lancet*, 1939, **1**, 1088.

[18] *Surgery*, 1939, **6**, 398.

EXPEDITION IN G.M.C. BUSINESS

The 150th session of the General Medical Council was probably the shortest in its history, certainly the shortest in the recollection of any of its present members. A body sometimes accused of dilatoriness disposed of eight disciplinary inquiries in three hours, during which time, after due consideration, it erased the names of three practitioners from the *Medical Register* and decided that the other five should remain. It is true that most of the cases arose out of police court proceedings for drunkenness and cognate offences, in which it is necessary to do little more than prove the convictions and hear any mitigating plea the respondent may make; but there was one charge of conspiring unlawfully to procure miscarriage, and another of committing adultery with a patient, both the practitioners concerned being struck off. A decision which marked a departure from the usual procedure was the erasure of the name of a practitioner against whom three convictions (two for being in charge of a car whilst under the influence of drink and one for being drunk and disorderly) had been recorded in 1937 but none since, and he had been for two years on probation. The reason which actuated the Council in arriving at its decision may have been the neglect of the respondent to give the usual assurances as to his future behaviour, but the case may indicate a stiffer line in dealing with charges of drunkenness. The Council showed an equal celerity over its educational business, which occupied less than an hour. It was stated on the agenda that the Council would receive oral reports from the chairmen of two committees *in camera*. The chairman of one of these committees gave his report in public in one of the most entertaining speeches ever heard in the Council, but at its conclusion another member "spied strangers," and after the question of the exclusion of strangers had been considered *in camera* the Press and public were recalled and asked to turn a deaf ear to what had so far occurred. To make up for the lapse of taking a report in public which should have been taken in private the Council took a report in private which should have been taken in public. This was the report of the Pharmacopoeia Committee, which presumably recommended the appointment of Professor J. A. Gunn as the new chairman of the Pharmacopoeia Commission. It would be a pity if, as happened on this occasion, all the business of the Council except its disciplinary inquiries were to be taken behind closed doors. The Council at this session was crowded into the small chamber of the Dental Board to avoid the difficulties of blacking out its own large chamber, but the speed with which the business went through was such that the precaution proved wholly unnecessary, and the only "black-out" was in the Press gallery.

IS LEUKAEMIA A NEW GROWTH?

Last year we reviewed Forkner's important monograph on leukaemia and allied disorders in man,[1] and this may be supplemented with profit by Engelbreth-Holm's review[2] of the results of research on leukaemia in recent years. No further advances have come from the clinical study of the disease apart from some improvements in the classification of leukaemia and the differential diagnosis, the latter due mainly to the introduction of sternal puncture and to some extent to routine *x*-ray examination of the bones in obscure anaemias. The prognosis remains uniformly hopeless, and the newer radio-active substances prepared with the cyclotron do not offer any great promise of superiority over thorium, radium, and *x* rays. Nor are technical changes such as the use of general rather than localized irradiation likely to be revolutionary. The well-known observation that local irradiation of the spleen, even with very small roentgen doses, produces a striking change in the condition in leukaemia offers a problem that still awaits solution. Clinical observation strongly suggests that leukaemia is a form of new growth. There is every transition from classical leukaemia to tumours such as chloroma and lymphosarcoma. The metabolism of the leukaemic cells and the morphological abnormalities they show are identical with those of neoplastic tissues. The diffusion of the lesion is a consequence of the diffuse location of the blood-forming organs and their lack of fixity as tissues. Moreover, it can be paralleled in quite different tissues, and Engelbreth-Holm gives such examples as neurofibromatosis, multiple primary cancer of the lungs, bilateral suprarenal tumours, and multiple carcinoma of the small intestine. If clinical observations allow us only to presume that leukaemia is a form of new growth, the observations on experimental animals amount almost to proof. Spontaneous leukaemia has been observed in most vertebrates, including the common domestic animals, but because of the high incidence and the ease of transference it has been most closely studied in the fowl and the mouse. The predisposing factors appear to be heredity, external environmental factors (irritation), and a virus. About twenty-five human families are known in which more than one case of leukaemia has been observed in near relatives. It is striking that twenty-two out of the twenty-seven cases collected by Petri were lymphatic in type, whereas on the average lymphatic leukaemia constitutes only 30 per cent. of all cases of leukaemia. It seems certain, therefore, that the familial incidence of leukaemia is more than a coincidence. Pure strains of mice have been bred in which the spontaneous incidence of leukaemia reaches 90 per cent., while in other strains leukaemia has been bred out so that its incidence is little over 1 per cent. Experiments in which after roentgen irradiation the spontaneous incidence of leukaemia in a strain rose from 2 to 20 per cent. indicate with absolute certainty that uninherited external factors also play a part. In the strains in which 90 per cent. of the mice succumb to leukaemia the remaining non-leukaemic animals apparently owe their freedom to external factors, for they transmit the leukaemic disposition to their descendants in as high a proportion as the mice which die of leukaemia. External agents known to produce or to increase the incidence of leukaemia in animals are radium and x rays, tar, and the carcinogenic hydrocarbons. A number of human cases have been published which suggest an increased incidence of leukaemia in men and women, such as radiologists and physicists, whose occupation repeatedly exposes them to radiation. In the fowl many of the spontaneous leukaemias can be transmitted to healthy birds by cell-free filtrates. This is probably a phenomenon of a different character from the induction of leukaemia by physical or chemical irritants. The virus acts much more rapidly and it is reproduced during the growth of the cells, which does not happen in the case of the carcinogenic hydrocarbons. Several groups of investigators have reported independently of each other on leukaemic strains in fowls where one and the same filterable agent can produce both leukaemia and sarcoma. In Engelbreth-Holm's strain intravenous administration of the agent was usually followed by the development of leukaemia, while subcutaneous or intramuscular application of the same agent more commonly induced fibrosarcoma. Although leukaemia in mice can be implanted from one animal to another it cannot be transmitted by a cell-free filtrate, but recent experiments suggest that cell-free transmission is not beyond the bounds of possibility and that there is no fundamental difference between leukaemia in birds and in mammals.

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[1] *British Medical Journal*, 1938, 2, 621.

[2] *Ergebn. inn. Med. Kinderheilk.*, 1939, 56, 267.

ACTIONS OF VERITOL

During the last few years a number of sympathomimetic amines have been introduced for clinical use as analeptics. In this group is the compound veritol, the chemical name for β-para-oxyphenylisopropyl methylamine, which has been the subject of a number of favourable clinical reports; but the exact nature of its pharmacological action has been a matter of controversy. Veritol causes a prolonged rise in blood pressure, and some authors have attributed this to vasoconstriction and others to increased cardiac output. Drs. Pona and Muratori,[1] in an investigation of this problem among normal persons and persons suffering from cardiac and other diseases, found in all cases a rise in systolic pressure accompanied by decreased cardiac frequency. Blood volume increased in the majority of cases, presumably because of the emptying of blood stores such as the spleen. Analysis of the individual responses, however, showed no certain relation between the extent of the rise in blood pressure and the increase in the blood volume. In those cases in which there was no increase in blood volume there was nevertheless a rise in blood pressure. This latter, the authors concluded, was due to at least three factors: a direct cardiac action, vasoconstriction, and increase in blood volume by mobilization of the blood stores. The action of veritol on the circulation is, therefore, complex, but the rise in blood pressure without increase in the heart rate is an important clinical feature.

HOSPITAL FUND FOR THE PROVINCES

Lord Nuffield announced on December 5 in a letter to the Minister of Health his intention to place in the hands of trustees a million share units of Morris Motors Ltd. to encourage the development of hospital regionalization outside the metropolitan area on the general lines laid down by the Sankey Commission on Voluntary Hospitals. These shares (now worth about £1,250,000) would be the nucleus of a central hospitals fund for the Provinces; in the London area there already exists in the King's Fund a central authority for the co-ordination of hospital finance and policy. Lord Nuffield hopes that through the new fund for the Provinces and the King's Fund in London there will ultimately emerge a truly national hospital service, "which will embrace all that is best of both public and voluntary effort with the maximum of economy to the State and to the private purse." This project already has the warm support of the Provisional Central Council of the British Hospitals Association, and the Minister of Health in expressing deep appreciation of Lord Nuffield's munificence and public spirit welcomes the conception underlying his proposal —"the conception of a co-ordinated hospital system which will look to the needs of the country as a whole and will cover as far as possible appropriate regional units." He agrees with Lord Nuffield that the Local Government Act, 1929, can rightly be taken as laying the statutory foundation of the conception.

For the time being the British Medical Association will continue the publication of its special journals, the *Archives of Disease in Childhood*, the *Journal of Neurology and Psychiatry*, and the *British Heart Journal*, and contributors are asked to send their papers to the editors of these journals at the following addresses: Dr. A. Moncrieff, F.R.C.P., The Middlesex Hospital, London, W.1; Dr. E. A. Carmichael, F.R.C.P., Hurstwood Park Hospital, Haywards Heath, Sussex; Dr. J. M. H. Campbell, O.B.E., F.R.C.P., Orpington War Hospital, Orpington, Kent.

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[1] *Acta med. scand.*, 1939, 101, 465.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

INJURIES OF THE SEMILUNAR CARTILAGES—I

BY

A. G. TIMBRELL FISHER, *M.C.*, F.R.C.S.

Injuries of the semilunar cartilages are somewhat frequently encountered in practice, and their prompt recognition and effective treatment are of considerable importance. There is probably no subject which is more apt to cause damage to the practitioner's reputation or to present the osteopath or bone-setter with a gratuitous advertisement.

Definition and Pathology

The term "displaced cartilage," although often used, is perhaps misleading, as in the great majority of cases a definite fracture of the cartilage occurs, and the most striking symptoms are due to the behaviour of the fractured portion and not to displacement of the whole cartilage. Hypermobility of a semilunar cartilage without actual fracture may be present under certain conditions, but is much rarer than is sometimes stated. The types of fracture are very varied, but longitudinal cleavage, either complete or incomplete, occurs most frequently (47.54 per cent. in my series). The complete longitudinal fracture is often called the "bucket-handle" type (Rutherford Morison). Next in order of frequency are fractures involving the anterior (27.86 per cent.), posterior (13.93 per cent.), and middle thirds. Injuries of the internal semilunar occur most frequently. The proportion of external semilunar injuries ranges in published statistics from 7 per cent. (Sir Robert Jones) to 20 per cent. (my figures) and even 28.4 per cent. (Dunn).

Mechanism of Semilunar Cartilage Injuries

In flexion and extension of the knee, and when the femur forms the fixed and the tibia the movable arm of the lever, the semilunar cartilages remain in contact with the upper surface of the tibial head but move slightly forwards in full extension and slightly backwards in full flexion. When the tibia is the fixed arm of the lever, as in certain stages of walking or running, the femoral condyles roll and glide over the upper surface of the tibia and semilunar cartilages. Rotatory movements, which are possible when the knee is flexed, take place on the inner side principally between the internal femoral condyle and the internal semilunar cartilage; but on the outer side a good deal of the movement occurs between the external semilunar cartilage and the tibia, and the cartilage moves to a great extent with the external femoral condyle.

The deep fibres of the internal lateral ligament are firmly attached to the inner convex surface of the internal semilunar cartilage just behind its centre. This ligament normally assists in preventing excessive rotation inwards of the femur upon the fixed tibia or external rotation of the tibia upon the fixed femur. A sudden rotation inwards of the femur upon the fixed tibia with the knee in partial flexion may cause a rupture of some of the deep fibres of the internal lateral ligament, and a sprain results.

When the ligamentous injury is of a more serious nature the inner side of the joint is opened up, permitting the internal semilunar cartilage to move to a variable degree towards the centre of the joint and, in a continuation of the rotatory movement, the cartilage is ground between the internal condyles of the femur and tibia. Actually, of course, this combination of events takes place in the fraction of a second. The internal semilunar cartilage is thus subjected to both compression and torsion strains and various types of lesion result, particularly the bucket-handle type and lesions of the anterior portion. The bucket-handle lesion is more likely when abduction is a well-marked feature.

This combined form of strain explains the peculiar shape of the fractured surfaces, which often overlap like the approximated blades of scissors. If, however, the attachment of the internal semilunar cartilage to the deep fibres of the internal lateral ligament remains intact this portion acts as a hinge, and the anterior part of the cartilage may be torn, or various forms of tear may occur opposite the fixed portion of the cartilage. Injury to the posterior end of the internal semilunar and some types of bucket-handle lesion are probably caused by forcible external rotation of the femur upon the fixed tibia when the knee is slightly flexed, or, conversely, by internal rotation of the tibia upon the fixed femur. These movements are also probably responsible for injuries of the anterior portion of the external semilunar cartilage. Injury to the posterior portion of the external semilunar cartilage is probably due to internal rotation of the femur upon the fixed tibia, and vice versa, and buckle-handle lesions of the external semilunar to either mode when adduction is prominent.

Signs and Symptoms

There are two principal modes of onset. In the first and most common the early symptoms are severe, and any recurrences tend to become more frequent but associated with less reaction. In the second, symptoms are slight at first but gradually become more definite, until locking occurs, when the onset of the first class is simulated and a similar sequence of events follows. In the first class the patient experiences acute pain, usually more severe over the affected cartilage, and may fall to the ground. Mechanical locking often occurs, and usually takes the form of an immediate inability to straighten the knee completely. It is sometimes very difficult at the time of the original accident to distinguish between this mechanical block to extension and the limitation due to muscular spasm, which is always present in any acute injury to the joint. In some cases of injury to the posterior part of a semilunar cartilage there may be a mechanical block to full flexion. Tenderness over the semilunar cartilage is experienced, its position depending upon the site of the injury. Synovial effusion ensues rapidly in severe injuries and more slowly in the less severe types. In the former the effusion is largely haemorrhagic.

In the second class there is usually a history of recurrent attacks of pain with or without effusion or of "giving way" of the knee before true locking occurs. It is probable that in this class the attachments of the cartilage are gradually stretched and a certain amount of hypermobility of the cartilage precedes the actual fracture. In recurrent cases a history of attacks of mechanical locking or sudden "giving way" of the knee is important, and physical signs between attacks may be few. Tenderness over the semilunar cartilage can frequently be elicited, together with cartilage crepitus on deep palpation. McMurray's test is sometimes positive, and there is often a certain amount of synovial effusion and wasting of the quadriceps extensor. Radiography gives no clear guidance in semilunar cartilage cases; but this should never be omitted, since by means of it we can ascertain whether some coincident condition, such as fracture of the tibial spine, loose or foreign body, osteoma, or osteoarthritis, is present.

Treatment of the Original Injury

This should be carried out on the following lines: If locking is present the displaced portion of the cartilage must be replaced by manipulation without delay. This is followed by rest from weight-bearing until the acuter symptoms have subsided, combined with firm bandaging of the joint over a thick layer of wool. The use of strapping, plaster-of-Paris, or splintage is not advised, although the purely temporary use of a back-splint may be necessary if the patient is restless. Physical treatment in the form of radiant heat, massage of the limb, and careful active movements is instituted from the first, and, provided all rotatory movement is avoided, is of value in aiding the absorption of traumatic effusion, in alleviating pain and spasm, and in preventing adhesion formation and muscular wasting. In the absence of locking, this treatment (which closely resembles that for a severe sprain of the knee) is begun at once. In an average case, when the acuter symptoms and synovial effusion have appreciably diminished, a little walking may be allowed, the compression bandage being still worn. Physical treatment in the form of massage and re-educational exercises for the thigh muscles is continued and steadily increased, although all rotatory movements must be avoided.

MANIPULATIVE TECHNIQUE

The replacement of the fractured portion of the semilunar cartilage may be easy or, in cases such as some varieties of the complete bucket-handle type and when the displacement has remained unreduced for several days or weeks, extremely difficult. Replacement without the aid of anaesthesia is quite possible, but it is made more difficult by associated muscular spasm and is a painful procedure; an anaesthetic is therefore advisable. Gas or gas-and-oxygen, if skilfully administered, usually suffices in early cases. Intravenous evipan or pentothal is a valuable alternative, but should not be given in the surgery or the out-patient department, admission to nursing home or hospital for a short period being desirable. If the cartilage has remained unreduced for some time ether or chloroform may be necessary.

Method 1 (Figs. 1, 2, and 3).—The patient lies upon his back on a couch or operating table. Assuming that we are dealing with the internal semilunar cartilage of the right knee, the practitioner grasps the sole of the patient's right foot with his right hand and the affected knee with his left hand. He first fully flexes the knee and, while abducting to open up the inner side of the joint, rotates the tibia inwards and outwards. This movement may be repeated with the knee flexed to 90 degrees. In some cases the mere movement of flexion reduces the displaced portion, but usually this takes place during rotation or during the final movement. This consists in a rapid movement of extension accompanied by internal rotation. In the case of the external semilunar cartilage the outer side of the joint must be opened up by adducting the

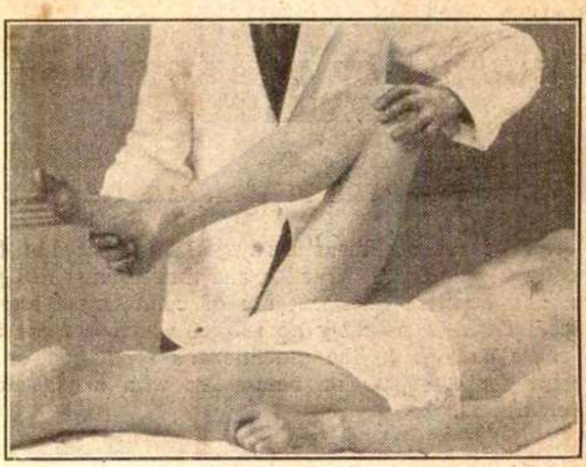

FIG. 1.—Method 1. Manipulation of right knee for fracture-dislocation of internal semilunar cartilage. Stage 1: Full flexion.

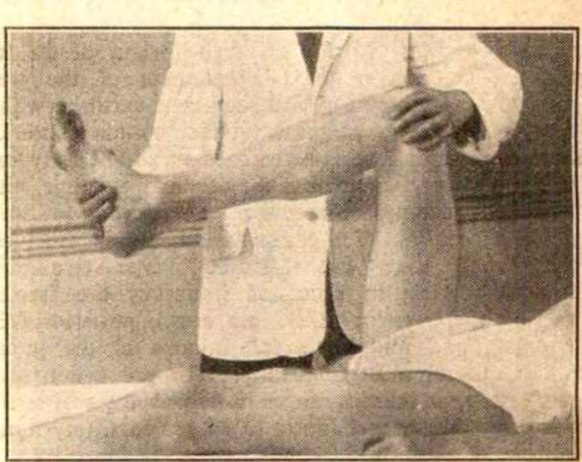

FIG. 2.—Method 1, Stage 2: Rotation combined with abduction.

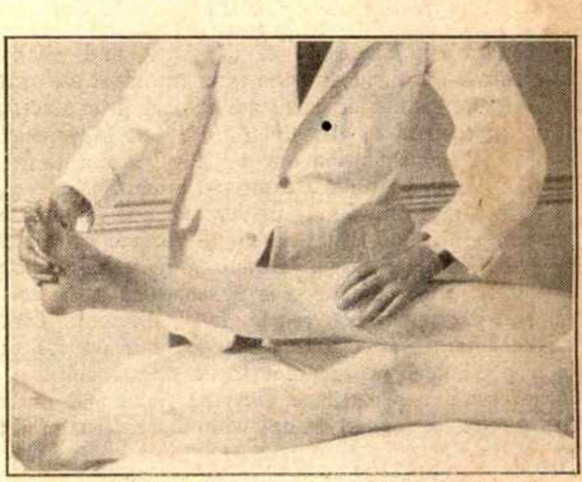

FIG. 3.—Method 1, Stage 3: Extension terminating in internal rotation.

leg, and the final movement is one of extension combined with external rotation.

Method 2 (Fig. 4).—The above method usually succeeds in original cases of average severity. When it fails a more effective method of abducting or adducting the joint and bringing about the necessary rotation should be tried. In the first method described above it is a disadvantage that the abducting and rotating forces are not applied directly to the tibia. The following method overcomes this difficulty, and once the technique is acquired it is extremely effective. In fact, I have often reduced displacements by this means without an anaesthetic when previous attempts elsewhere under anaesthesia have failed. The patient either sits in a chair or lies with the leg hanging over the end of the operating table. The practitioner grasps the upper end of the patient's leg just below the knee with both hands and grips the patient's foot between his thighs. The knee is first flexed through 10 to 15 degrees, and in the case of the internal semilunar cartilage he strongly abducts the joint with his thighs, aided by his hands. Then with the knee in partial flexion and well abducted a very strong movement of external or internal rotation is communicated to the tibia by the practitioner's hands. Replacement is usually accompanied by an audible "snap" which is quite characteristic. The knee should then be extended, particular attention being paid to the "screw-home" movement at its termination, and if the manipulation has been successful this movement should be full and free. The most satisfactory test of reduction, however, is that the patient can forthwith perform the movement of full extension either painlessly or with a minimal amount of pain. This is an important sign, and if active extension is still restricted and painful the displacement has not been rectified. After reduction a firm compression bandage should be applied and the after-treatment described above should be carried out.

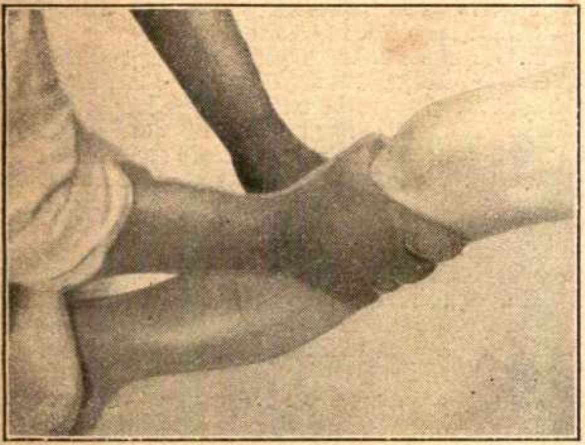

FIG. 4.—Method 2. Manipulation of left knee for fracture-dislocation of semilunar cartilage.

THE QUESTION OF EARLY OPERATION

The treatment by manipulation and suitable after-treatment of every original injury of a semilunar cartilage associated with locking has been described. It must be clearly borne in mind, however, that in a somewhat high percentage of cases the original displacement is followed by recurrences, particularly when delay in replacement has occurred and when the lesion has been a serious one. This fact should be explained to the patient, and in view of the extremely satisfactory results following removal of the damaged semilunar cartilage by an experienced surgeon it may well be that the future will see earlier recourse to operation in certain cases. For example, I was asked to see an international association footballer who severely damaged a semilunar cartilage in the first match of the season. Locking was present, and as this player was a "key" man in the team immediate removal was advised. This, however, was declined by the authorities and manipulation only performed. This was followed by the appropriate after-treatment, and six weeks elapsed before the player was able to take the field. Shortly afterwards the knee broke down again, and I was then asked to remove the offending cartilage. A further eight weeks elapsed before the player was able to resume, so that for the greater part of the season he was incapacitated. If the original advice had been taken the player would have been available for the cup final, and, owing probably to his absence, the cup was won by a rival club. Many managers of football teams now insist on early operation. Every case must, however, be treated upon its own merits. Patients are not all professionals engaged in strenuous and exacting forms of exercise, and in most cases manipulative replacement of the original semilunar cartilage injury associated with locking appears to be at any rate the best short-term policy.

REGIONAL HOSPITAL ORGANIZATION

[FROM A CORRESPONDENT]

In planning for the future there are two distinct lines, followed according to individual temperament. In the one case will be set down what seems to be an ideal plan for providing what is needed. In the other case attention is first and chiefly given to the existing factors, and the question asked is how they may be brought to the state of efficiency required. The history of successful planning is on the side of the second method: existing factors are stubborn elements in any situation, and have a way of taking their revenge if neglected.

Recent Hospital Planning

In the last thirty years several plans of hospital organization have been worked out and offered to the British public. Some of these have made no reference to existing establishments; some have been based upon one existing system and have disregarded others. As the problem is how to produce a system out of our own resources an examination of these resources is surely the first step towards laying our plans. Certain people would, however, have us treat our resources as indefinite, if not infinite. Some among these would scrap the present controls, and therefore their experience, and start anew with a National Control, which for their argument they assume would exercise its powers at least better than any of the present controlling bodies, if not perfectly. It does not need a training in logic to realize that such taking of something as given which is not given robs a scheme of what every sound scheme needs—namely, a foundation in experience.

The efforts which have in fact produced hospitals in this country have been of two sorts—those of people who, in communities small and large, have combined to establish and maintain out of their own pockets the hospital their community needed; and those of people elected to govern, in Parliament and local councils. Efforts of the first sort have been made and sustained in London for centuries, and elsewhere for generations, and have been partly medical, partly lay. Here and there by this means we are still able to build and equip and maintain hospitals which are the equal of any in the world; but over the country generally there is difficulty in maintaining the "voluntary" hospital, and, having regard to the sources from which its finance has been derived, these difficulties are likely to increase. Efforts of the second sort culminated in the Bill of 1929, which required counties and county boroughs to administer the Poor Law hospitals transferred to them, and empowered them to extend and develop these hospitals, outside the Poor Law.

Those who are willing to base their plans on the actual factors in a situation and on calculated probabilities are likely to accept the estimate that, in general, the financial resources of those who have built and supported voluntary hospitals in the past have been diminished by taxation and are likely to be further diminished. It would be imprudent and improvident to turn a blind eye to this fact. Its consequence is obvious enough. People cannot be forced to provide "voluntarily" and cannot be persuaded to do what they are unable to do; in general the share in providing hospital treatment taken by the donation-and-subscription-supported hospitals will diminish, that taken by the hospitals provided by public funds will increase. The reaction to this probability of some of those who are interested is to declare that "the voluntary hospital system must be maintained at all costs." A system can be maintained by legislative regulation or by persuasion. Persuasion will not enable men to do what they cannot do; legislative regulation means here superseding the financial foundation of the voluntary hospital system by another.

The Public Hospital

Does legislative regulation of the British hospital system mean that "all is lost," as some would have us believe, that the best and most distinctive features of our treatment principles will thereupon disappear? The answer "Yes" is based on an assumption that has no validity—the assumption that these best and distinctive features cannot be displayed in a system provided by public funds. Medical opinion is divided on this question; the uncompromising "Yes" has come chiefly from those who represent the lay management of the voluntary hospital. They base their argument on the fallacy that the public hospital must be taken as it is at present, and cannot be improved to incorporate the best features of the best of the voluntary hospitals to-day. This fallacy can only be entertained by those who disregard their own and the public hospitals' history.

An example of the kind of argument that is used is as follows. The method by which medical appointments are made to hospital posts in the voluntary hospitals is one that ensures that the best men only will be appointed. They are chosen virtually by their colleagues, and the critical judgment of their colleagues is the best available. Accepting this view as correct, history does not show that this "ideal" method is inherent in the voluntary system, nor is it universal in this system to-day. A generation ago a man who was a candidate for an honorary post in a voluntary hospital sent his application to, and canvassed, the "governors," who might number several hundreds. The plan was improved when "electoral bodies" were substituted for the general mass of governors; but, even so, a candidate could not afford to abstain from canvassing, although this could only be indirect. Admitting that the more instructed selection of to-day is still better than this, the history of the change proves nothing more than that methods of selection can be improved. What it certainly does not prove is that the defects that may exist to-day in the system of appointment in the public hospitals are incapable of removal and must be considered unalterable. All the main arguments of the "all is lost" attitude of the voluntary hospital lay supporter are similarly based. He assumes that the county and county borough hospital system, which is ten years old, has stopped growing and that its ability to learn has come to an end.

The "Voluntary" System

General medical opinion would catalogue the following as among the virtues of the "voluntary" system:

(*a*) *Regional Organization.*—The voluntary system was organized regionally, though in a somewhat haphazard fashion, and no serious barriers prevented patients from going to the hospitals and the men best able to deal with their complaints. It must here be remarked that the regional pattern has been less in evidence since the 1914–18 war than before. Attempts at self-sufficiency on the part of small provincial towns and a reluctance to allow patients to travel have been characteristic of the period, show no sign of diminishing, and are not guided and controlled. The voluntary institutions of many small centres have attempted this self-sufficiency, and co-ordinated regional effort is to-day conspicuously absent. The result is waste, failure, and misdirection. On the other hand, no one who cares to talk with responsible members of council hospital committees and with medical officers of health will be ignorant of the fact that they look upon regional organization as a course upon which they are already set, and expect the Ministry of Health to help them in developing it. Considerable progress along this line has already been made by the London County Council; there is good reason to hope that provincial regions will be able to follow.

(*b*) *Contact between Patients and Hospital Medical Officer.*—Contact has been personal and close because the patient and his doctor chose the hospital officer who should be consulted. With the development of out-patient clinics in the public hospitals a start has been made in many which encourages this personal contact, and there is nothing in the administration of these hospitals which prevents this contact being maintained when the patient enters on his convalescence.

(*c*) *Facilities for Teaching and Training the Medical Student.*—There are those who plan to confine the teaching of the student to the "voluntary" hospital. It may well be asked, Is this done in the interest of particular institutions or in the interest of medical education? If it is desirable that the medical student should be given as wide a clinical view as he can digest, if it is desirable that he should see the commoner complaints as well as the rarer, then the advantages attached to taking him into the public hospitals cannot be denied. Indeed, these advantages have been widely recognized by teaching staffs already. They are so obvious that neglect of the opportunity must come under suspicion of being interested—that is to say, dictated by some consideration or scheme which is not primarily based upon affording the student the maximum of practical clinical culture.

The Policy of the Medical Profession

The amount of financial support that is at present being afforded to the voluntary hospitals, and the amount which they may expect, vary much from one town to another, from one part of the country to another. If in one place the signs are not such as to lead reasonable judgment to believe that new buildings and increasing income will be forthcoming, wherein does wisdom lie for the medical profession? Does it lie in the leaders of the profession keeping themselves apart from the public hospital, maintained on Government order, and with all the substance of a City Corporation supporting it? Only wishful thinking will deny that development and extension of service on the part of the public hospital is the prospect. Is it too much to say that only wishful thinking will imagine the maintenance of a parallel system, alongside but apart? Who will maintain it? The Government? Apart from what has been created and is being maintained by its own order?

But upon what fundamental idea will the Government proceed? Will not this be, and must it not be, the providing of hospital treatment for the people? Unless it can be shown that the "virtues" of the old voluntary system cannot be introduced into the public system there is no argument for maintaining a parallel system apart from the latter, and medical teaching and clinical research will have to adapt themselves to the unified hospital order. The expectation of those who look for a second system maintained apart, for the convenience of a teaching staff and under special governance, is likely to be disappointed. The medical profession need lose nothing in any given area by this change if it opens its eyes to what is occurring and plans its policy accordingly. If it shuts its eyes and delays, holds on to expectation of some financial *deus ex machina,* who will intervene to maintain the existing state for some secondary and subsidiary reason, then it will make a mistake that will be difficult to retrieve and lose a chance which may be hard to recover.

A public hospital system, regionally organized by a Ministry of Health, with Government support for teaching and research, is a prospect that need dismay no one, least of all the doctor who determines to do what he can to bring into it the traditions of personal intimate service to the patient that have been characteristic of British medicine. In these days of an Emergency Medical Service there is an opportunity of doing this that should not be missed.

THE STATE OF THE PUBLIC HEALTH

SIR ARTHUR MacNALTY'S REPORT

The Chief Medical Officer of the Ministry of Health deserves sympathy in the circumstances in which his Annual Report for 1938[1] has had to be prepared and presented. It is a narrative of peace-time progress, but it makes its appearance at a time of war which must mean the postponement of many of the plans and aspirations its pages reveal. While the material was being passed for press events—like the German soldiery—had marched. Some parts of the report assume the continuance of peace, others suggest that war is imminent, and yet others—notably the section dealing with venereal disease—that it has already begun. The satisfaction felt in recording progress in so many fields must be seriously qualified by the knowledge of inevitable reaction, the crippling of certain services, the relaxation of certain vigils, the effect of the anxieties, the impoverishments, and, above all, the sheer boredom of war upon the mental and ultimately upon the physical health of the community. Apart from any direct effects of war itself, the evacuation of children and mothers from urban areas must alter the contours of the health picture, for better or worse, perhaps for generations to come.

Emergency Organization

The chapter on emergency medical organization describes only the preparations "should this great calamity befall us," but a footnote has to be added that since the chapter was written the hour has struck and the organization—or disorganization, according to the point of view—has come into existence. In writing of the emergency organization the Chief Medical Officer pays tribute to the voluntary hospitals and their medical staffs for their public spirit in so readily adapting themselves to the new situation. It is emphasized that an important point in the organization is that there should be no interference by the Department in the internal administration of any hospital. The individual hospitals, says the report, are to continue to arrange their own affairs and to be responsible for the treatment of their patients as in peace time, and many of their patients, even in danger areas, will continue to be the ordinary civilian sick. The Ministry also congratulates itself upon its success in obtaining the whole-hearted support of the medical profession and the advice of its leaders and experts in the difficult task of air raid precautions.

1938 was a year of health progress, and despite crises and international preoccupations existing health services were maintained and a new health service, relating to cancer, created. It was a year also of encouraging vital statistics. The death rate for England and Wales was lower than in any previous year except 1930, and the infant and maternal mortality rates and the death rate from tuberculosis were the lowest on record. Of the causes of death, diseases of the heart and circulatory system accounted for 327 out of every thousand deaths at all ages, and malignant disease for 143. If the working period of life be taken (ages 15 to 65), these two conditions retain their places, but the respective numbers are 234 and 182. The reason why the proportion of deaths from diseases of the heart and circulatory system is increasing is largely the growing proportion of older persons in the population. "A young man *may* die, an old man *must* die." Deaths from violence totalled 22,780, and it is worth noting that twice as many men as women committed suicide—3,558 against 1,758.

Prevalence of Infectious Diseases

The number of notifications of diphtheria was 65,000, with 2,931 deaths. Artificial immunization against diphtheria continues to make slow but uninterrupted progress. Its value is undeniable, and not yet sufficiently appreciated by the public. Diphtheria is the principal cause of death among children of the ages of 4 to 10, and is high up in the list of causes in the group aged 10 to 15. It can be said to be the principal killing disease of school age. During the last few years the number of deaths from diphtheria has exceeded the number from measles and whooping-cough, but while no specific remedy has yet been found against these other diseases, with diphtheria it is far otherwise, for there are a number of prophylactics of proved worth, and only the willing co-operation of the public is lacking.

Notifications of scarlet fever numbered just over 99,000, but there were only 359 deaths. The large incidence of this disease, and probably therefore of other forms of streptococcal infection, continues practically undiminished. Deaths from measles and German measles numbered 1,641. Influenza was not epidemic in 1938, but there was a rise in the early part of 1939. It appears, however, that this increased prevalence was irregular in distribution, and that in some communities a substantial portion of the morbidity was due to febrile respiratory catarrh, sometimes of a severe type, and not to influenza. The number of cases of acute poliomyelitis was 1,489, the highest in any year since notification became compulsory in 1912, and the number of deaths was 172. There were eighteen cases of small-pox notified, nine being of the major variety, with one death. Eight cases of acute nervous disease following vaccinations were reported. Six of these were cases of primary vaccination in adolescents or young adults, and furnish additional evidence for the warning repeatedly given by the Ministry that primary vaccinations at school age and in adolescence, except in special circumstances, are to be deprecated.

The great decrease in incidence and mortality of enteric fever in this country is one of the most striking facts in the history of epidemiology. Both cases and deaths were at their lowest in 1938, but it is pointed out that the price of freedom from enteric fevers is constant vigilance, communal and individual. The co-operation of the individual with the community is necessary, for while the incidence of enteric disease may rightly be regarded as an index of the state of sanitary evolution at which the community has arrived, it is no less an index of personal hygiene, for infected persons may convey the causative organism to others by carelessness or lack of cleanliness.

Infants and Mothers

A certain qualification has to be made concerning the fall in the infant mortality rate. (By the way, the number of infant deaths last year, 32,724, was less than one-fourth of the number thirty-five years ago.) The fall is due to the reduction of deaths in the later months of the first year of life. The conditions which have caused this fall must either be inoperative in the earlier months, especially in the first month, or must be counterbalanced by other adverse factors. Stillbirths also showed little or no reduction, and the problem of the causation of stillbirths has much in common with that of neo-natal death.

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[1] *On the State of the Public Health.* Annual Report of the Chief Medical Officer of the Ministry of Health for the Year 1938. H.M. Stationery Office. (3s. 6d. net.)

The total mortality from puerperal sepsis was 0.89 per thousand live births, and that from other puerperal causes 2.19, making a total puerperal mortality of 3.08, the lowest on record. The confidential reports received by the Ministry ascribed 1,468 deaths to pregnancy or childbirth and 289 to associated causes, the figures being lower than those given by the Registrar-General. The causes of death were:

Sepsis	293
Haemorrhage	241
Toxaemia	247
Embolism	162
Other causes directly due to childbearing	198
Ectopic gestation	38
Abortion	289
Associated conditions	289

Leaving out the cases of abortion and of ectopic gestation, the delivery in 726 of the fatal cases was in hospital, in 486 at home, and 220 women died undelivered. The nature of the delivery was as follows:

Natural	700
Forceps	329
Caesarean section	163
Craniotomy	32
Other operations	49

Local investigators report that in 622 of the total 1,757 cases there was an assessable avoidable factor, whilst in 630 cases no such factor existed. As to the remainder they express no opinion.

The highest maternal mortality in any administrative county was 8.86 per thousand births in Brecknockshire; the lowest was 1.07 in Cambridgeshire. The highest in a county borough was 7.5 at Chester, and the lowest 0.87 at Croydon.

Extended reference is made to the Ministry's midwifery schemes. In England 169 local supervising authorities under the Midwives Acts have inaugurated domiciliary schemes whereby over 7,000 midwives are employed, either by the authorities themselves or by voluntary associations. Although it is still early days for conclusions, it is claimed that on the whole the standard of practice has been raised. In Wales nineteen local supervising authorities employ 312 midwives directly, while 444 are employed through nursing associations. Medical practitioners are summoned in increasing numbers of cases in Wales; the 20 per cent of notified births in which practitioners were summoned in 1934 became 30 per cent. last year. Apart from the domiciliary midwifery schemes the most noteworthy development in the maternity service is the extension of in-patient accommodation and the provision of new departments. Local authorities in England during 1938 provided or subsidized 9,439 beds at 558 institutions, to which 177,000 patients were admitted.

Cancer and Tuberculosis

The new national cancer service gives special interest to the section of the report devoted to this subject. The total number of deaths from cancer in England and Wales in 1938 was 68,605, and the standardized mortality—meaning the figure after differences solely due to changed constitution of population in regard to age or sex had been eliminated from the crude rate—was 1,005 per million living. It is the deaths of males from cancer which are increasing steadily; the female rate since 1924 has been almost stationary, with an irregular tendency to fall. This may be due to the greater curability of cancer by modern methods as it affects women—for example, carcinoma of the breast and of the cervix uteri. The breast is the most frequent site of cancer in the female, the stomach of cancer in the male. The arrangements made by local authorities under the new service and the objects which the service hopes to achieve are fully set out. The guiding principle should be, says the report, the removal from the path of practitioners and of their patients of those difficulties which tend to prevent the latter from receiving the treatment best suited to their condition and receiving it at an early stage of the disease.

The statistical returns for tuberculosis are again encouraging. The general decline continues and the check to the fall in mortality in young adults which has caused concern for many years appears to be passing away. The deaths from respiratory tuberculosis last year numbered 21,930, or about half the average yearly number recorded during the last decade of the nineteenth century. New cases numbered 43,205, not many more than half the annual number just previous to the last war. In non-pulmonary tuberculosis there was a slight increase of notifications—from 12,661 to 12,810, with a fall, however, in the number of deaths. The increase is associated with the larger number of persons treated in residential institutions under county authorities. It is thought that the improved services in the counties may explain the increase. In Wales the death rate is also declining, but the decline lags behind the English figures.

"The Camp Follower of War"

Venereal disease, a problem of declining importance, comes forward again as "the camp follower of war." Increased sexual promiscuity due to the heightened nervous tension and excitement is a sufficient explanation. The shift of large numbers of people to areas hitherto sparsely populated may be associated with outbreaks of the disease in places unprovided with facilities for treatment. It will be necessary for county and county borough authorities in some areas to extend existing centres and in others to set up additional ones. It is suggested that the best way of meeting the difficulty would be to form mobile units, each consisting of a specialist in venereal diseases, a nurse, an orderly, and perhaps a clerk, with a motor vehicle containing equipment. Such a unit would take over the work of any existing centre which in the war emergency had been left without personnel if the gaps could not be filled from local reserves. It could also offer facilities for treatment in new places where outbreaks of venereal disease had occurred and the distance to the nearest centre was too great for those infected to attend it regularly.

Smooth Running

The Insurance Medical Service has reached the happy position of having nothing to report except continued efficiency. The number of complaints made by insured persons in respect of the treatment given by their practitioner is almost negligible. The cases investigated by medical service subcommittees last year numbered 141, but in only forty-one was any fine imposed upon the practitioner, and no practitioner was struck off the list. There were fifty-six other cases in which remuneration was withheld because proper medical records had not been kept or information furnished. When it is remembered that this is a service covering eighteen million people and employing seventeen thousand practitioners, and that the possibilities of misunderstanding inherent in the delicate relationship of doctor and patient—even when that relationship is not complicated by a doctor's bill—are constantly in the offing, the evidence of smooth working is truly remarkable. The regional medical staff of the Ministry dealt with 453,000 references, nearly all of them from approved societies, and nearly all for decision as to incapacity. The staff also paid just upon 12,000 visits to practitioners in connexion with their duty of administrative supervision of practitioners' prescribing, their certification of incapacity, and their keeping of records.

The report covers still other fields of public health. One of them concerns food control. Incidentally, a very large prevalence of avian tuberculosis has been found by inspectors in poultry markets. There is also recorded the discovery of a business (since closed down) in the Midlands in which dead one-day-old-chicks or dead unhatched chicks were used as a filling paste for pies. There were seventy-two outbreaks of Salmonella infection, with 230 cases and eight deaths. *S. aertrycke* was identified in thirty-seven of the outbreaks.

The story is also told of port sanitary work, which, like the British Navy, is a silent but ceaseless service. The work of guarding this country against the spread of epidemic disease requires "much toil and trouble on the part of medical officers of our national health organization, a wide experience of epidemiology, constant observation, the instinct of a detective for finding clues, and the patience of Job in conducting an investigation." During the year 1,068 vessels on which infectious disease was present or had occurred on voyage arrived at twenty-three ports in England and Wales. At these same ports over 10,000 rats were examined for indications of plague infection. Air ports are now added to the Ministry's responsibility.

Several interesting papers by members of the medical department of the Ministry are printed as appendices. The subjects include puerperal mastitis, an outbreak of toxic polyneuritis on a steamship, and an inquiry into hydatid disease in Wales. And there are enough tables to employ amateur statisticians for a winter of "black-out" evenings.

PREVENTION OF TUBERCULOSIS

The National Association for the Prevention of Tuberculosis held its annual conference in Belfast last summer, and the *Transactions* which have now been published are of interest and value to all who are concerned in any way with tuberculosis in the community. Among the subjects dealt with are: problems of organization and local administration of tuberculosis schemes, including arrangements for the induction of artificial pneumothorax and the after-care of patients so treated; tuberculosis in the adolescent; and architectural problems of tuberculosis institutions. Such a survey as these *Transactions* present is of much more immediate value than many textbooks on the treatment of tuberculosis, and certain suggestions put forward indicate some important issues. Thus it is urged that artificial pneumothorax involves the co-operation of a thoracic surgeon with a specialist physician equipped with full *x*-ray facilities. This procedure should be utilized in 50 per cent. of cases of open pulmonary tuberculosis, and hospital beds should be available for these patients. Large tuberculosis clinics should have central "filling stations" and a sufficiency of artificial pneumothorax apparatus, while after-care on sanatorium routine lines should follow in all cases. This operation should never be considered as a substitute for sanatorium treatment. It is pointed out that symptoms of tuberculosis in adolescents might be absent or slight, including a constant succession of colds, aphonia in young women, mental and physical lassitude, failure to increase weight with growth, erythema nodosum, amenorrhoea, and changes in disposition. Radiographic examination is essential, and the results may be very startling. The presence of tubercle bacilli in the sputum indicates that ulceration into a bronchus has already occurred and is therefore a late sign. The rising cost of building sanatoria is in some measure due to the unfortunate tendency to "go one better" than the last and does not necessarily make for greater efficiency of work and administration. The *Transactions* may be obtained from the offices of the National Association at Tavistock House North, Tavistock Square, London, W.C.1.

Cardiazol Shock.—This treatment was given to 207 schizophrenic patients, to twenty-four suffering from depression, and to fifteen cases of mania. Complete remission of the symptoms was obtained in all the patients in the last two categories as well as in a good proportion of the schizophrenic cases, notably in those whose mental disturbance was of recent date. Hahnemann tempers his praise of this treatment with the reservation that it needs to be supplemented by rational psychotherapy.—One Year's Clinical Experience of Psychoses treated with So-called Cardiazol Shock. V. Hahnemann.—*Ugeskr. Laeg.*, June 29, 1939, **101**, 771.

MEDICAL EDUCATION IN WAR TIME

EMERGENCY MEASURES

[FROM A SPECIAL CORRESPONDENT]

Anxious parents and others have been writing to the lay press about the disruption of medical education. The suggestion has even been made that the teaching of medical students is at a standstill. Upheaval there has certainly been, especially in the London area, with the considerable emptying of what have hitherto been known as the teaching hospitals and the transfer of their staffs to country hospitals in the sectors. But a position for which there was no precedent was met by the deans and other administrators with such resourcefulness that it now seems possible that the war, so far from having dealt a paralysing blow at medical education, may in fact establish it with an improved organization.

Medical education is being continued at not far short of normal levels. The students in some cases are suffering inconvenience due to dispersal, but it cannot be said that they are under educational disadvantage; indeed, in some respects they have opportunities which were denied to their predecessors. One of the several deans from whom was sought the information which follows, the Dean of the London Hospital Medical School, stated that the clinical material available to his students had been increased sixfold as a result of war conditions, without taking into account the number of chronic sick in public assistance institutions or the patients in mental and in fever hospitals. The number of teachers, he added, had also increased, with the result that the classes are smaller while the number of beds allocated to each student is larger. He acknowledged that his own hospital was in an exceptional position, as it was responsible not only for Sector I (Essex) but also for Sector II (North-East London and parts of Middlesex and Hertfordshire), with a considerable number of municipal and voluntary hospitals suitable for teaching purposes. This dean expressed the hope that the new arrangement which the war has precipitated would never be altogether abandoned. Another dean also referred to the value of the assistance now being rendered by people not normally on the staffs of hospitals and by staffs of hospitals not normally taking students. Admittedly there has been disarrangement of time-tables, a certain amount of what may be called geographical inconvenience, and a temporary contraction of facilities in some respects, but those may in the end prove to be small set-offs against a considerable educational gain.

London Medical Schools

The pre-clinical students of the London schools have been evacuated to other centres—Cambridge, Leeds, Bristol, Oxford, Glasgow, and the University of Wales, among others. The following brief statements of the position at the London schools relate only to clinical students.

St. Bartholomew's.—Clinical students are housed at thirteen institutions. The distribution in October was seventy-five at St. Bartholomew's itself, thirty-nine at five aid posts around the hospital, fifteen at the London Fever Hospital, four at St. Mark's, eleven at the Royal Chest, thirty at the Royal Northern, and 281 at seven other hospitals within the sector outside London. It has been possible to arrange for students at the outlying hospitals to go for instruction to the three centres: St. Bartholomew's, Friern (New Southgate), and Hill End (St. Albans). First-year students are stationed at Hill End, where a course of preliminary medical studies has been arranged, and dresserships and clerkships are taken there. At St. Bartholomew's itself the students in the intermediate years are taken in the special departments. At Friern the students in their final years receive tutorial instruction just before their examinations. Teaching in midwifery is spread out all over the sector; there are actually more midwifery cases than the college had in peace time. There are large units at Luton, St. Albans, and Highgate, and it is still possible to use the City of London Maternity Hospital and the district. Clinical cases are coming in large numbers. At the moment of writing (mid-November) there are 700 occupied beds in the sector (civilian and military sick). Out-patient material is somewhat meagre. From 400 to 500 out-patients attend daily at St. Bartholomew's, and out-patient departments have been opened there for ear and throat cases, eye cases, gynaecology, orthopaedics, dermatology, and tuberculosis. Arrangements have been made with a fever hospital. There are psychiatric specialists at all the hospitals where teaching is done, and at Friern 2,000 mental patients are available. Pathology is centred at Hill End, but some clinical pathology is taught at other centres. The Dunn laboratories at Bart's are kept open.

Charing Cross.—The principal centres of instruction are Charing Cross itself, and Stanmore, Watford, and Ashridge, where students are accommodated in large groups; there are smaller groups of students at other sector hospitals. About 20 per cent. are at the hospital in London. Lectures are given according to definite programmes for each centre. In some cases there are three lectures a day in addition to clinical work. Previously all experience of practical midwifery was obtained at Charing Cross. "External" facilities have now been found, and it is possible to provide all the work in this subject required by regulations.

Guy's.—Clinical studies are being undertaken at Guy's and at the county hospitals at Farnborough and Pembury. The distribution of students among the hospitals varies each quarter. During the present period approximately one-third are at Guy's, a quarter at Farnborough, a quarter at Pembury, and the remainder are divided between Orpington War Hospital and Joyce Green, Dartford. The students at Guy's itself are chiefly seniors in the last six months of study and first three months students. Systematic lectures are given at Guy's and also at Farnborough. The facilities available for teaching obstetrics include classes, out-patients, and wards at Guys and obstetric wards at Farnborough and Pembury.

King's College Hospital.—Clinical studies are undertaken at six hospitals in the sector, students being distributed proportionately according to the number of beds in each. About 25 per cent. of the students remain at Denmark Hill. Lectures are given according to the requirements of the various examining boards. Municipal and county hospitals are also affording instruction. Midwifery cases are attended by students at four hospitals in the sector, including King's College Hospital itself.

The London.—One-fifth of the students remain at the London Hospital. The remainder are distributed more or less in proportion to the number of beds at the various hospitals scheduled to receive casualties in Sectors I and II. Students have not been allocated to hospitals remote from London, such as Bishop's Stortford, Hitchin, and Colchester, and about half the students are at hospitals easily accessible to the London by bus or tram. Nor have the students been allocated to hospitals where no facilities for medical education exist, except in the case of a few hospitals in peculiarly vulnerable areas, such as Albert Dock and Tilbury. A number of the students work in the morning at the hospital to which they are attached, and come to London for systematic teaching in the afternoon. Systematic teaching is also in progress at King George Hospital (Ilford) and Southend General Hospital. At the London there is teaching in the out-patient departments in the morning, demonstrations in pathology at noon, clinical demonstrations in medicine, surgery, or obstetrics in the afternoon, and later still routine lectures. Clinical teaching in obstetrics is in progress at six hospitals and on the London Hospital district. Pathology is taught at four centres, but after Christmas the teaching in this subject will be centralized at the London. Every student is to spend one month at a mental hospital and one month at a fever hospital, an opportunity which has never occurred before.

Middlesex.—Clinical studies are undertaken at Middlesex and at nine other hospitals in the sector. The clinical students number 211, about fory of whom remain at Middlesex; five other hospitals have about twenty-five students each, and four others have about eleven each. Clinical lectures are arranged by the authorities at each hospital in the sector, according to facilities available. For other lectures certain centres have been selected, and students attend the nearest. Students attend for instruction in obstetrics first at Middlesex and later at St. Mary Abbots or Willesden Maternity.

Royal Free.—There are 151 students taking clinical studies at the Royal Free (of whom 37 are taking the finals in November or January), 44 at Three Counties Hospital, Arlesey, and a small number at St. Albans. A full time-table of lectures, etc., has been arranged at the Royal Free and at Arlesey, so far as possible in accordance with pre-war arrangements for clinical students. Students attend rounds at two L.C.C. hospitals. Lectures, demonstrations, and tutorials in obstetrics are arranged at the Royal Free, and students attend a maternity clinic and are on the Royal Free district for practical midwifery. Facilities are available for small numbers of students at three or four other places.

St. George's.—Clinical studies are being undertaken at the central hospital, where one-third of the students still remain, and at seven other hospitals, principally at West Middlesex County Hospital, Isleworth, and at Staines and Slough. Special acknowledgment is made of the assistance of the West Middlesex Hospital, which provides excellent material, and the members of its staff are most helpful in teaching. Facilities equal to the normal requirements for the teaching of obstetrics are available at one of the hospitals in the sector.

St. Mary's.—Of the 230 clinical students roughly half are at the four London hospitals in the sector. There are about four students for each hundred beds. The sector comprises a large number of county council hospitals. There has been no difficulty in arranging for teaching in obstetrics, which is available at several of the sector hospitals. A pathological course began at St. Mary's early in December. Arrangements have been made whereby students will be moved from place to place in rotation in accordance with the courses they require. Valuable assistance has been afforded by the staff of the British Postgraduate School and by some of the members of St. Thomas's staff at Park Prewett. In addition members of the staff of the London and Middlesex County Councils have helped in every way possible. Certain clinical teachers of St. Mary's are stationed at each hospital, and courses of instruction are given. There are regular lectures at each centre. The students are said to be thoroughly content with the teaching and clinical material at the various institutions, and on the whole it is the general verdict that while something has been lost in these novel war arrangements more has been gained, notably closer contact between patient and student and between student and teacher.

St. Thomas's.—At present the main clinical studies are being carried on actually at St. Thomas's and at Kingston County Hospital; there are 120 clinical students working at St. Thomas's, and roughly 24 students at four hospitals in the sector are carrying through a period of three months' study which will be credited to them in the examination schedules. Lectures are given both at Kingston (elementary clinical work) and at St. Thomas's, much in line with the systematic and clinical lectures of peace time. Kingston is providing facilities for clinical students beginning their studies, and instruction is given there by members of St. Thomas's staff and the staff of the hospital. Obstetrics teaching is being carried on with the co-operation of three hospitals, two of them L.C.C.

University College Hospital.—The medical school is using a considerable number of hospitals in the sector, for which purpose the sector has been divided into four groups. One group comprises University College Hospital itself, with five others, voluntary and municipal, in London, which are taking students. A second group of four hospitals works around Leavesden Mental Hospital as a centre. A third combines the Hampstead General Hospital, the North Western Fever Hospital, and New End Hospital, for general medicine and surgery and special departments, and, at New End, a little midwifery. The fourth group is centred at Edgware and includes three large hospitals. At U.C.H. there are 200 beds for casualties and 110 for civilian sick, with a considerable number of lying-in beds. Two-thirds of the midwifery is being done there. While the school is not turning students away, it is very near what would be considered full numbers. For the first month or so of the war students were distributed where it was thought they would be wanted for casualties, but during October the school arranged for every student to be doing the work he should be doing according to the educational programme. Some things cannot be done owing to shortage of patients and shifting of pathological facilities, but students are getting the education they ought normally to receive, and assistance is being rendered by people not ordinarily on the staffs of hospitals and by staffs of hospitals not ordinarily taking students. Lectures are being given at University College Hospital and at Leavesden and Hemel Hempstead.

Westminster.—Clinical studies are being undertaken at Westminster (89 students), St. Mary Abbots (6), Fulham (10), and St. Stephens (L.C.C.) (4). All the students are in London. A full programme of lectures is given at Westminster Hospital and facilities for teaching obstetrics are provided as in normal times.

Provincial Medical Schools

At the provincial schools there has been less disturbance than in London. At Birmingham clinical students are all allotted to the various units of the United Hospital. As the practical clinical work is on a smaller scale than in peace time rather more lectures and demonstrations are being given. Facilities for teaching in obstetrics are reduced but still sufficient. There is no reason why the time at which each student may appear for his successive examinations should be delayed by the rearrangements which have been made, and the school has every hope that the training will be as efficient as in peace time.

At Bristol clinical teaching is being carried on in the same hospitals as in peace time, and lectures are given exactly as under normal conditions. At Cambridge for their clinical work students go to London and provincial hospitals. At Newcastle clinical studies are taking place normally in four hospitals, mainly in the Royal Victoria Infirmary. Although the out-patient department was closed at the outbreak of the war, it was reopened within a fortnight. The necessary lectures are being given, with some readjustment of time-tables. At Leeds clinical studies are being undertaken at the usual hospitals, among which the students are distributed as in peace time. At Liverpool and Manchester teaching follows normal lines. At Oxford fifty students began clinical work in October and a certain number of more senior students have returned to Oxford from elsewhere. Lectures are being given as arranged by the committee for clinical teaching and approved by the Board of the Faculty. At Sheffield the usual programme is being followed. At the Welsh National School of Medicine work is continuing so far as possible under normal conditions. Certain of the beds at all the hospitals at Cardiff have been evacuated, but clinical teaching is being given at the main teaching hospitals—namely, Cardiff Royal Infirmary and two corporation hospitals.

Many of the provincial schools are acting as hosts to London pre-clinical and first-year medical students. Bristol has received pre-clinical students from the Middlesex. Cambridge has given facilities to the London and St. Bartholomew's students for pre-clinical work. At Leeds twenty-six students from King's College, London, have been admitted to the first-year medical course. Charing Cross pre-clinical students are also being taught at Leeds and at Glasgow. Manchester has over one hundred students from St. Mary's Hospital; London, for pre-clinical study in anatomy and physiology. Oxford has St. Thomas's pre-clinical students. At Sheffield thirty-five women students from University College, London, are taking anatomy, physiology, and pharmacology. At Cardiff a number of students from University College Hospital Medical School have been received for their first clinical year. Birmingham also, though an evacuation area, has received students from other schools.

Reports of Societies

CHEMOTHERAPY IN MOUTH INFECTIONS

At a meeting of the Section of Odontology of the Royal Society of Medicine on November 27, Mr. S. F. St. J. Steadman presiding, Professor A. FLEMING gave a paper on antiseptics and chemotherapy.

Professor Fleming first reminded his audience that there were natural anti-bacterial substances in the mouth, and that when chemical antiseptics were used the action of these on the natural antiseptics should be appreciated. There was a powerful anti-bacterial substance in the saliva, and in the mouth as elsewhere there were phagocytic cells which played a large part in resisting infection. Turning to the sulphonamides, he said the first thing to remember about them was that they were specific in their action; they would act on some organisms but not on others. They had little or no action when bacteria, even the most sensitive, were in large numbers. A third point was that peptone, as well as large numbers of bacteria, inhibited the action of sulphonamide. Finally, the chief action of these drugs was bacteriostatic, and it was the natural defence mechanism of the body which completed the destruction. The action would therefore be most dramatic when the infection was by a very sensitive organism such as the haemolytic streptococcus, and where there was no marked localization of the infection. If there was a localized infection, more especially an abscess, such dramatic effect need not be expected. In these cases the numbers of bacteria were likely to be large, and in the abscess tryptic ferments would be liberated from degenerated leucocytes with the consequent production of peptone.

There was one aspect of this drug therapy which might be important in war time. Surgeons were afraid formerly to excise wounds that were infected with the haemolytic streptococcus because of the danger of opening fresh tissues which the streptococcus would invade, thus giving rise to septicaemia. But sulphonamide could be administered to the patient so as to obtain a good concentration in his blood, and the surgeon could get rid of the sloughs, excising the wound without any danger of spread. As the body had to complete the destruction of the infected bacteria, it was clear that better results would be obtained when the natural defences were as efficient as possible. It was important, therefore, to use all possible means of raising the immunity. Several methods of doing this were available. It might be done passively by the administration of serum, or actively by vaccines. So far as odontological practice was concerned there were not many serums with any real bactericidal action on the microbes of the mouth, but an autogenous vaccine could be made with the greatest ease, and it should be possible to immunize the patient to a point at which the drug might be expected to have a much better effect than if used alone.

Dr. E. W. FISH said that one serious problem in dental practice was the danger of giving a bacteriaemia to a child who might have some incipient trouble leading on to endocarditis. It was not always convenient to carry out cauterizing of gum margins in a child before taking out a tooth. Unfortunately it appeared that certain organisms were not at all susceptible to the action of sulphonamide drugs, and he wondered whether Professor Fleming could indicate the organisms commonly found in the mouth which were susceptible and those which were not.

Mr. JOHN BUNYAN said that a healthy, perfectly formed mouth was one of the cleanest parts of the body, but unfortunately a healthy mouth was rarely encountered. It was commonly abused by unsuitable food, tobacco smoke, alcohol, the use of a hard brush, and patent antiseptics. The question of local antiseptics was an extremely important one to the dental surgeon, and one that had not been much investigated. He himself had tried all the antiseptics offered for use in the mouth, and had found hypochlorites most useful for what they were required to do—namely, to clean out the albuminous masses, dead bacteria, and the food debris. To use vaccines was to deal with the problem at the wrong end.

Mr. B. W. FICKLING said that at the Royal Dental Hospital there had been some investigation of the mode of action of these drugs, and many of the investigators considered that the concentration of the drug at the site of infection was important. Some work had been done on the concentration of M & B 693 (sulphapyridine) in the saliva, and it was found that whereas this drug was present in the mouth in all the cases it was only present in about one-third to one-fourth of the concentration in the blood. With regard to the use of these drugs in incipient submaxillary abscesses, he had analysed sixteen cases which had been admitted to the Royal Dental Hospital for this condition. Of this number twelve required incision no matter whether they had had sulphapyridine or sulphanilamide or had not, and only two cases could be called successes in the sense that when incision failed to cure the sulphonamide drug proved effective.

Professor FLEMING, in reply to Dr. Fish's question concerning the possibility of bacteriaemia after extraction, said that so far as his limited knowledge of the conditions in the mouth went the question of the sensitiveness of mouth microbes to these drugs had not been worked out. If the organisms were sensitive he had not the slightest doubt that bacteriaemia could be prevented. A question had been raised about the strength of the drug in the saliva. It was in the infected tissues, not in the saliva, that one wanted to kill organisms. Doubtless in the infected tissue outside a pocket one would get the drug in much the same concentration as in the blood, but it might be much weaker in the saliva and yet act perfectly well as regards the infection.

Chemotherapy in Gingivitis and Pyorrhoea

Dr. A. J. COKKINIS, in a short communication, described some work which he had superintended in a small chemotherapy clinic at St. Mary's. The object was to discover the value of chemotherapy in *S. viridans* infections, especially pyorrhoea. Cultures were taken from the patients' gums at various stages of pyorrhoea and gingivitis, and *S. viridans* was discovered in practically every case, sometimes in pure culture, very often mixed with non-pathogenic organisms, and in quite an appreciable proportion of cases mixed with *S. haemolyticus*. Over seventy cases had been treated with sulphonamide compounds—namely, sulphanilamide, sulphapyridine, and uleron. The last-named proved much less effective than the others. There was little difference between the first two, provided the sulphanilamide was given in rather larger doses. The majority of the patients showed some clinical response to treatment, however advanced their pyorrhoea. He was convinced that the obvious manifestations of acute gingivitis, whether localized or diffuse, could be made to clear up completely in about a week by oral administration of sulphanilamide or sulphapyridine, 3 to 4 grammes daily. The fetor and the morning stain on the teeth and lips completely disappeared. The oedematous interdental papillae shrank and the large lymph glands which had been observed in some of the cases subsided. This result could be produced by sulphonamide therapy without any adjuvant measures at all. But it was quite certain that one course of chemotherapy did not suffice to cure gingivitis, the condition relapsing a week or so afterwards. By giving further courses, however, and particularly by increasing the immunity response by preliminary and accompanying vaccine therapy, the infection could be indefinitely delayed for six months or more. In cases with a deeper infection, with pus pockets, apical abscesses, and loosening of the teeth, chemotherapy and immunotherapy could only play a secondary part, if any at all. There were evidences of anti-bacterial activity, however, even in these cases, the pain of a pulp infection being relieved or a pus pocket cleared up. But this was temporary, and cure could only be obtained through the odontological surgeon. An incidental benefit was the prevention and treatment of the septicaemia occasionally produced by the bacterial shower liberated into the blood stream after the extraction of several septic teeth. He had seen cases in which this septicaemia had cleared up quickly under sulphonamide compounds, and it was probable that vaccines and a short course of sulphonamide therapy would largely abolish these unpleasant complications of dental surgery.

Local News

IRELAND

Tuberculosis in Belfast

The report for 1938 of the chief tuberculosis officer for the county borough of Belfast states that 2,200 persons, notified as suffering from signs of tuberculosis in various forms, were examined during the year. Of these 36 per cent. were found to be tuberculous, and a further 7 per cent. suspect. The total number of patients who received treatment or who passed under observation was 7,842. It was found that 47 per cent. of new tuberculous patients examined had a definite opportunity of infection through contact with other tuberculous patients among their own family connexions. The report stresses the importance in avoiding infection of scrupulous care, not only in the disposal of sputum, but in the cleansing of the hands and of table utensils. It is suggested that every patient and attendant should have a separate set of table utensils for his own use. The application of P.P.D. (purified protein derivative) tests proved to be especially valuable in children. A positive reaction may provide early diagnosis; repeated tests at periodical intervals may furnish helpful guidance concerning the progress or regression of the disease. On the other hand, a negative reaction, especially in the higher dilutions of P.P.D., prevents sufferers from bronchitis or wasting being wrongly labelled as tuberculous. Application of the test to children of pre-school age may aid in the discovery of a hitherto unsuspected case of tuberculosis in the household.

Medical Research Council of Ireland

The Medical Research Council of Ireland has made the following awards: Dr. W. R. F. Collis and Dr. Oliver FitzGerald, each a grant-in-aid for special apparatus; Dr. Martin G. A. Little, part-time grant for one year from January 1, 1940, for an investigation of the nervous control of the digestive glands, the work to be carried out in the department of physiology, University College, Galway, under the direction of Professor J. F. Donegan; Dr. D. P. Murnaghan, grant-in-aid towards the expenses of his research training in the department of embryology, Carnegie Institution of Washington, Baltimore, U.S.A., under the direction of Dr. George Streeter. Whole-time grants have been renewed for further periods as follows: Mr. Patrick Boyle, one year; Dr. T. G. Brady, one year; Dr. P. J. Holland Clarke, six months; Mr. R. P. Cooke, one year; and Dr. Cecil Mushatt, five months. Part-time grants renewed are: Dr. Oliver FitzGerald, one year, and Dr. D. K. O'Donovan, one year. The grant-in-aid awarded to each of the following has been renewed: Dr. E. S. Duthie, six months; Dr. Ninian Falkiner, one year; Professors W. R. Fearon and R. W. Ditchburn, six months; Dr. Gerald FitzGerald, one year; Professor J. B. Gatenby and Miss O. E. Aykroyd, one year; and Dr. David Mitchell, one year.

SCOTLAND

Scottish Mental Pathology

The annual report for 1938 of the Scottish Mental Hospitals' Pathological Scheme gives a short summary of the work of Dr. Campbell, the pathologist, in collaboration with his predecessor, Professor Biggart, on the nature and incidence of the polio-encephalitis first described by Wernicke. The opinion is put forward that this disease is not necessarily restricted to cases of alcoholic excess, but may occur in a wide variety of conditions of bodily privation or exhaustion. A lack of vitamin B_1, whether or not associated with an infective focus, is regarded as a potent factor in its causation. The report points out the importance of this research with a view to the diagnosis and treatment of the many obscure, obviously organic cases of mental and cerebral deterioration. with no evidence of arteriopathic degeneration sufficient to account for the symptoms, which are received every year in mental hospitals. Among other researches mentioned are an investigation of the influence of the thyroid on the temperature disturbances produced by experimental lesions in the hypothalamus, an experimental study of the quantitative variation of the cerebral capillary bed under different conditions, and an investigation into the reactions of the cerebral vessels in normal and hypertensive animals. Routine work comprised 252 histological examinations, including examination of 221 brains.

Edinburgh V.D. Scheme

The annual report for 1938 of the City and Royal Burgh of Edinburgh Venereal Diseases Scheme describes the year under review as a period of transition from older and less efficient to recent improved methods of treatment. The adoption of the new chemotherapy for gonorrhoea produced a marked drop in the number of out-patient attendances, with the substitution of one interview with a medical officer every day for thrice daily irrigations. Sulphapyridine (M & B 693) is now given as the routine treatment of gonorrhoea in all its manifestations, including vulvo-vaginitis in young girls and ophthalmia neonatorum. The proportion of successful cases is estimated at approximately 90 per cent. The only disadvantage of the new form of treatment is that the symptoms subside so rapidly that patients too often fail to continue attendance for the prescribed period. With regard to syphilis the report states that increasing use is being made of the pentavalent arsenical compounds, acetylarsan and tryparsamide. The total number of cases during the year shows a slight increase. Routine Wassermann testing is advocated, a procedure which in Denmark has resulted in a striking decrease in the death rate from congenital syphilis. In follow-up work some difficulty is experienced regarding "problem girls," those who have had not only one but two or three illegitimate children. These girls readily become infected with venereal disease and are a source of danger to themselves and society. Although sterilization would prevent the production of children by irresponsible parents, it would only lead to further promiscuity and increased chances of the spread of disease. The provision of a suitable home or institution for this type of girl would contribute to the solution of the problem.

Correspondence

Cancer of the Lung

SIR,—In a letter in the *Journal* of April 2, 1938 (p. 755), I drew attention to the presence of some form of silica and iron in certain dusts that were under suspicion as causing cancer of the lung.

It was stated therein that experiments with mice were being conducted to study the effects of iron and silica dusts separately. These experiments, although not all completed, have reached a stage at which it is already established that exposure six times a day on five days of each week for one year to dust clouds consisting either of precipitated silica (SiO_2) or of iron oxide (Fe_2O_3) increases the incidence of primary lung tumours in mice, compared with that for control mice from the same stock and not specially dusted. About sixty mice lived to ages greater than ten months, and of these only 6 per cent. of the controls exhibited primary lung tumours compared with 20 per cent. of the sixty mice dusted with silica; this silica experiment is completed. The silica produced fibrotic nodules in the lymph nodes, but there was less indication of fibrosis in the lung tissue, much of the silica being removed by way of the trachea and by the lymph channels. With the iron oxide dust, although the experiment is not completed, the incidence of lung tumours is already sufficient to give over 20 per cent. for the total dusted mice living ten months or longer; all the mice are not dead yet. Thus the iron oxide seems more potent than the silica, but such fine conclusions may not be drawn, since the lungs seem to contain more iron oxide than silica.

In any case the increases due to silica and to iron oxide seem together sufficient to explain the 45 per cent. incidence of lung tumours obtained in mice exposed to road dust from which the tar had been extracted by benzene (*Brit. J. exp. Path.*, 1937, **18**, 215). The highest incidence (74 per cent.) occurred in the mice exposed to road dust containing tar (*Brit. J. exp. Path.*, 1934, **15**, 287; ibid., 1939, **20**, 122), and it might be considered that 74 minus 45 per cent.—that is, 29 per cent.—were due to the tar and the remainder of the excess of the 45 per cent. over the normal incidence might be regarded as being due to such inorganic constituents of the dust as silica and iron oxide. Since these constituents are also in the general atmospheric dust, it is not unreasonable to hold that some of the tumours present in control mice are due to similar causes. There is evidence that iron and silica may cause cancer of the lung in man (Dreyfus, T. R., *Z. klin. Med.*, 1936, **130**, 256; Kennaway, N. M., and Kennaway, E. L., *J. Hyg.*, Camb., 1936, **36**, 236; Turner, H. M., and Grace, H. G., ibid., 1938, **38**, 90).

It has been suggested by several observers that cancer may originate in cells suffering from anoxia. To test this in the lung an experiment has been conducted for nearly three years with mice bred and living almost continuously under low oxygen pressure (13 to 15 per cent.—mostly 13—of one atmosphere) in a chamber. Thirty-two of such mice older than ten months have died, and of these over 30 per cent. have exhibited primary lung tumours. They have not been specially dusted, but have been exposed to some dust from soda-lime (used to absorb carbon dioxide and moisture), and also to dust from the sawdust bedding and from the mixed grain-and-bread diet. Fifty-three controls which had been shut up in a similar chamber with soda-lime, etc., but with normal oxygen pressure—namely, 20.9 of an atmosphere—show an incidence of 15 per cent. for primary lung tumours, so that the anoxia appears to double the incidence. Primary lung tumours often seem to originate in a portion of collapsed or thickened lung, and presumably the centre of such an area might suffer from some degree of oxygen want, which might be one of the factors in tumour formation. The experiment is being continued, and full details of the above result will be published elsewhere.

To date 363 control mice have given 12 per cent. incidence of primary lung tumours; on the other hand, 542 similar mice exposed to various dusts under suspicion as causes of lung cancer in man have given 36 per cent. incidence.—I am, etc.,

London, N.W.3, Nov. 29. J. ARGYLL CAMPBELL.

The Intervertebral Disk

SIR,—Having recently spent ten months at the Mayo Clinic, and having been deeply impressed with the work there on protruded intervertebral disks, I was particularly interested to read Mr. Pappworth's article on the subject in your issue of November 25 (p. 1038). He raises, however, several points which seem to me to be controversial and worthy of discussion.

His use of the phrase "a critical review" as a subtitle seems hardly justified, for six of the seven articles which he uses as the basis for his arguments are from the same clinic, and, as he himself admits, they are concerned with the same series of cases. True enough, he includes one article from the Mayo Clinic, but refers to it only once apart from direct quotation. His main argument seems based upon the fact that he has discovered several statistical discrepancies in the six papers of the Boston group, and it should be made clear that there is no similar quarrel with Camp and Love's paper. Nor does it seem reasonable to maintain that minor inaccuracies (which might be due to a change in the opinion of the workers) invalidate the claim that prolapsed intervertebral disk is a clinical and pathological entity. It is fortunate that Dr. Love himself (*Proc. roy. Soc. Med.*, 1939, **32**, 1697) has recently restated with the utmost fairness the views generally accepted in America. This article itself is a complete answer to Mr. Pappworth, and should do much to advance knowledge on this side of the Atlantic. It is only necessary to emphasize several minor points.

It is by no means true to say that the appearance of the prolapsed disk after injection of lipiodol is "not clear." The smoothly rounded defect of an extradural type opposite an intervertebral space on the antero-lateral aspect of the cord is very characteristic, but it must be realized that if this defect is a small one it may be overlooked if the patient is not examined on a tilting table, when the actual flow of the oil can be observed. This point has been mentioned by Dr. Campbell Golding, and is one which may explain some of the failures of English radiologists to demonstrate the lesion.

Dr. Love explains that his cases at the Mayo Clinic are referred to him by the orthopaedic surgeons, but that the operation itself is a neurosurgical procedure. Mr. Pappworth views it from the orthopaedic angle, and asks if laminectomy is the only treatment. It should be clearly realized that the aim of operation is not to perform a laminectomy but to remove the prolapsed disk; that the orthopaedic approach is only a stage in the treatment. It is not too much to say that much of the odium which has been heaped on the operation in America itself is due to the efforts of orthopaedic surgeons, who have been content with simple decompression by a laminectomy without removing the disk, and who have been disappointed with the end-results. Indeed, I believe that in several cases the disk has been removed through the interval between adjacent laminae without touching the lamina at all.

To argue that a lesion which can so project into the spinal canal as to reduce its calibre by at least one-half and yet cause no compression of the cord or nerve roots is to me flying in the face of all commonly accepted principles. We have no great difficulty in visualizing that a subdural haematoma can compress the brain, and I cannot see that it is logical to imagine that the spinal canal, which is equally a closed space, will behave differently. And certainly to anyone who has seen the defects in the lipiodol column either under the screen or on the radiograph there can be no question that there is an encroachment of some sort upon the canal.

I therefore conclude that Mr. Pappworth has failed to make good his claims, and that, to quote Dr. Love, "intraspinal protrusion of the intervertebral disks is a pathological entity. . . . It has a fairly definite symptom complex . . . laminectomy with removal of the protruded intervertebral disk should be performed . . . the results in 300 cases justify the method."—I am, etc.,

Leicester, Nov. 27. E. PETER ALLEN.

Sir,—In an article in your issue of November 25 (p. 1038) a contributor discusses retropulsion of the nucleus pulposus. The paper appears to be based entirely upon the meaning which Mr. Sidney Pappworth reads into the well-known work of Mixter and Barr. I find myself at variance with almost every statement made in this piece of armchair criticism, but had perhaps better confine myself to dealing with the three questions which Mr. Pappworth raised and answered.

1. Can retropulsion of the nucleus pulposus cause symptoms? If by this term Mr. Pappworth means the small and often multiple lesions found by Andrae in post-mortem specimens the answer is, almost certainly, No. It is a rupture of an intervertebral disk which causes neurological disturbance—a much larger lesion than that described by Andrae. The latter has probably no clinical significance in the present connexion. Mr. Pappworth does not apparently understand the pathology of the symptom-producing lesion.

2. Is laminectomy the only treatment? If symptoms are severe and persistent and a ruptured intervertebral disk has been demonstrated its excision is the only treatment. If Mr. Pappworth had seen one of these large fibrocartilaginous masses removed at operation I think he would realize the futility of waiting until it was "absorbed or cicatrized." As an orthopaedic surgeon he had better consider waiting until a torn medial meniscus in the knee-joint has been absorbed or cicatrized.

3. Are the results of laminectomy such as to justify operation? One has only to study the figures of Mixter and Love to feel satisfied that the results more than justify laminectomy; they indeed indicate it. Anyone who has seen a patient entirely incapacitated over a period of many months immediately relieved of symptoms by the operation will realize the value of this new method of treatment in suitable cases.

In speaking of the diagnosis of disk lesions Mr. Pappworth remarks that "the true appearance of a disk lesion is not too clear." This is a surprising statement, as the radiological features have been clearly set out since Mixter's earlier papers and have also been described in detail by his radiological colleagues. I find myself in agreement with two of Mr. Pappworth's statements: the first, that there should be a close season for the writing of articles; the second, that he is fortunate in having had enough leisure to examine the claims for a new procedure before operating, for I am certain that an operation carried out without a proper understanding of the lesion it is designed to treat can lead only to the disappointment of patient and surgeon. In this particular case it will also tend to obscure the value of Mixter's excellent work.—I am, etc.,

London, W.1, Dec. 1. J. E. A. O'Connell.

Treatment of War Wounds

Sir,—Dr. Bhatia (November 25, p. 1062) raises the issue between plain gauze and vaseline gauze. I think everyone has experienced the disadvantage of the use of gauze with its wide mesh which can easily be penetrated by granulations. As a result the deepest strands of gauze are often built into the granulation tissue and can only be torn out by force with pain and haemorrhage. This happens to a considerable degree in spite of thorough impregnation with vaseline. To avoid this undesirable event I have for years laid on the deep surface of the saucerized wound a layer of ordinary thin linen bandage, about fifty threads to the inch. Until recently this, too, was impregnated with vaseline; now it is plain. Two or three six-inch lengths of four-inch or six-inch bandage will generally cover a moderate-sized wound. Each slightly overlaps the next. As the gauze packing is subsequently pushed gently into the wound it carries this thin linen "tablecloth" in front of it. The mesh is too fine for penetration by granulation tissue but offers no resistance to soakage. Weeks later it peels off the granulations far more easily than gauze, with little or no discomfort and much less bleeding.—I am, etc.,

Headington, Oxford, Nov. 28. G. R. Girdlestone.

Treatment of Wounds by Closed Method

Sir,—The remarkable results obtained by Dr. Trueta by the closed-plaster method of treating excised bomb wounds are arresting to those who gave thought to wound treatment in the last war.

It was obvious that the minds of many present at Dr. Trueta's lecture at the Royal Society of Medicine were groping for a satisfactory explanation of this revolutionary method. Much light is thrown on the application of the closed principle in an article in the *Australian and New Zealand Journal of Surgery* of July, 1939 (p. 72), by Fay Maclure, on mechanical principles in the causation and treatment of disease, under the heading of "Limiting and Enveloping Membranes." He writes:

> "Life is dependent on tension. . . . There must of necessity be a restraining or limiting layer of membrane. When the integrity of the enveloping membrane is destroyed, as, for example, in herniation of muscle through torn fascia, the mechanics of the contents is completely disordered. One of its principal effects is on the circulation. . . . The rebound mechanism whereby the energy of arterial pressure is transformed into an accessory pump, maintaining the flow of lymph and venous fluid, is dependent on a resistant layer. When that membrane disappears the area of loss becomes an area of failing circulation, and stagnation and oedema ensue. To restore the circulation in the affected part it is necessary

to reconstitute the limiting membrane or to replace it with an efficient substitute. . . . Pressure therefore becomes an essential in the treatment of all unhealed areas."

Excision of damaged tissue cuts out the dead and presents a living front line to the attacking organism. Pressure on the front line keeps it living and active and enables circulation to play its part in the contest. The lines of communication are then unimpeded.

It would appear that Dr. Trueta and Fay Maclure have established a further principle of healing which if practised will confer untold benefits on injured man.—I am, etc.,

London, W.1, Nov. 29. E. T. C. MILLIGAN.

Treatment of Gas Gangrene

SIR,—I shall be grateful if you will give me space to correct an impression that Professor Girdlestone (*Journal*, December 2, p. 1110) has gathered from my letter (November 25, p. 1058). It would ill become one who went from Liverpool to France in 1914 to "gird" at the Thomas bed splint, an invention which has done so much to alleviate human suffering. Indeed, I well remember the acute disappointment I experienced when, with numerous cases of fractures waiting for them, a large consignment of Thomas splints by some dreadful mistake turned out to be in children's sizes.

I quite agree with Professor Girdlestone that correct application is essential, and we were specially favoured at Royaumont, for with characteristic generosity my kind friend Sir Robert Jones sent out to us his most highly trained sister, who stayed for a month and gave many demonstrations on his methods. May I now too, even after this lapse of time, acknowledge with gratitude the value of the articles on fractures under war conditions by Sir Robert Jones which appeared in your *Journal* in 1916. They were read and reread until the pages were ragged!

If I appeared to be unduly severe on the plaster-of-Paris method, I think it must be stressed that the interval which is likely to elapse between the infliction of the wound and the complete operative treatment is of vital importance if there is a likelihood of the development of gas gangrene. This was shown in the tabulated list of cases of gas gangrene I recorded after the battle of the Somme, where the interval extended into days, not hours. In such cases even a tight bandage can be disastrous, and I have seen a gangrenous hand encased in a skin-tight bandage—a bandage which under ordinary conditions would receive special commendation at a V.A.D. inspection. I wonder if it would be out of place here to urge upon first-aid lecturers to teach the practical method of application of the Thomas splint, even in the first course of lectures.—I am, etc.,

Killagorden, Cornwall, Dec. 4. FRANCES IVENS-KNOWLES.

Psychological Casualties in War

SIR,—Although it is not quite clear whether he is referring to civilian or military life, Dr. R. D. Gillespie's letter in the *Journal* of December 2 (p. 1110) suggests that "wide advertising of the supposed inevitability" of war-time increase in psychological disorders "does more harm than good." While this may be true in relation to the general public, it can at least do no harm for doctors to recall some historical facts about these disorders as they occurred in soldiers during and after the last war. Excluding psychoses, pensions for psychological disorders were awarded to more than 100,000 men. The cost of these pensions, according to an estimate made by the late Sir John Collie of the Ministry of Pensions staff, must have been approximately ten million pounds per annum in the years immediately after the war, and amounts to over four million pounds this year. If, as seems possible in this war, civilians may be submitted to the stresses which precipitated in soldiers a group of psychological disorders of this size, these facts cannot be entirely without bearing on the potential incidence of such disorders in our war-time civilian population.

Dr. T. A. Ross's current plea for observation of recruits during early training (December 2, p. 1110) repeats the similar strongly worded plea made by Sir William Osler over twenty years ago. At that time findings of the later War Office Committee on Shell-shock (1922) were to some extent anticipated by Dr. T. W. Salmon, an outstanding American psychiatrist, who was sent to England from that country through the cooperation of the Rockefeller Foundation to study the problem of psychological disorders in the British Army. His report mildly indicated the difficulties which had arisen over what was then a novel problem. Speaking of the British Army experience, he pointed out that it "carries important lessons; more important than all others is the result of careless recruiting." "The importance of providing, in advance of their urgent need, adequate facilities for the treatment and management of nervous and mental disorders can hardly be overstated."

The problem of psychological disorders is no longer novel, and this time there can be little excuse if we fail to make an attempt to deal with it.—I am, etc.,

London, W.1, Dec. 4. A. T. M. WILSON.

SIR,—In your issue of November 4 Wing Commander R. D. Gillespie stated that he had never heard of any data which purported to show a rise in psychoneurotic illness during the war of 1914–18. If, as I suppose, he was referring to civilian sickness, it should be pointed out that there are no unassailable figures for the incidence of civilian psychoneuroses, either during or after the war. His statement that the incidence remains unaltered is not capable of either proof or refutation. It is not a fact but a belief.

In his latest letter (December 2) the belief has apparently widened in scope; for now he claims that mental illness *in general* was probably less during the last war than in peace time. There is some evidence to suggest that this may be true of certifiable mental illness. It is certainly not proven in the case of civilian psychoneuroses, and the belief is supported by no better evidence if it is extended to cover psychoneuroses in the Services. The true incidence of psychoneurotic illness in the Services in peace time is unknown. In the Army health reports it is obscured by the classing of such cases under such headings as "D.A.H.," "Disease of the Nervous System," "Disease of the Digestive System." Similarly, the incidence in the last war is unknown. Many such cases were treated at aid posts and casualty clearing stations and returned to duty without appearing in the official statistics. Some were diagnosed as malingerers and others shot by order of courts martial. Many more severe cases were misdiagnosed—for example, as "V.D.H."—or were left undiagnosed and labelled according to some presenting physical symptom.

The only statistics of any value are not of incidence but of more or less long-term disability. It is an incontrovertible fact that 103,257 pensions were given for psychoneurotic disability after the last war, and that well over a quarter were still being paid last year. In other words, one man out of every thirty on the day-to-day "strength" in the last war was considered sufficiently incapacitated by psychoneurosis to be given a pension, and one man out of every 103 on the day-to-day "strength" was considered sufficiently incapacitated *twenty years after the war* to merit continuance of that pension. These appallingly high figures are those of severe incapacity only. The figures of actual incidence must be much higher. Whether this war-time incidence is higher or lower than that in peace time is anybody's guess; but if Wing Commander Gillespie's guess is right it shows not that more facilities for treatment are unnecessary in war time but that our peace-time facilities are seriously inadequate. He is concerned lest the provision of treatment should breed psychoneuroses. Many of his colleagues are concerned about a much more real danger—namely, that such a cavalier attitude towards the problem of psychoneuroses may lead, as it did in the last war, to widespread personal distress and military inefficiency, with a bill of ten million pounds per annum for psychoneurotic pensions to follow. Dr. T. A. Ross's letters, and other evidence, suggest that our concern is justified.

The War Office committee of 1922 made recommendations to avoid the difficulty, which Dr. Ross mentions, of diagnosing potential psychoneurotics at a single short interview. It recommended that depot medical officers should be skilled in the diagnosis of such personalities, and that the depot non-commissioned officers should be instructed in the behaviour characteristics for which they should refer recruits to the medical officer. In this way such recruits could be gradually eliminated during the period at the depot. The experience of the American Expeditionary Force teaches the same lesson. The attempt to reject potential psychoneurotics at the initial examination was abandoned in favour of observation and specialist examination during training. The 1922 committee's recommendation for early specialist treatment within the divisional area, or, for more serious cases, at special hospitals at the army base, to avoid evacuation to England, were equally well founded on medical evidence.

Dr. Ross's cases, and others of which I know personally, make it clear that the committee's recommendations for prophylaxis and treatment of psychological illness in the Army are not being implemented. If they had been many of the psychoneurotic soldiers who, in this present war, have already been evacuated to England would never have reached France in the first place, and, in the second place, having fallen sick, would not have reached the general hospitals in England.—I am, etc.,

London, N.W.3, Dec. 4. G. Ronald Hargreaves.

Genito-urinary Injuries in War

Sir,—Will you allow me a belated comment on Mr. G. E. Neligan's valuable article on injuries to the genito-urinary tract, recently republished in *War Wounds and Air Raid Casualties*. As certain chapters of this book are likely to be used as a textbook by many young surgeons without previous war experience the advice given must be very exact.

First may I stress the importance of Mr. Neligan's advice that suprapubic drainage, with an indwelling de Pezzer or Malecot catheter, be provided for all wounds of the bladder and urethra, and also (at least under field conditions) for all cases of paraplegia. The prophylactic value of this simple procedure is as great as that of colostomy or caecostomy for wounds of the rectum and colon, and should never in any circumstances be omitted.

Secondly, I venture to question Mr. Neligan's statement that partial amputation of the penis may be necessary in cases of severe laceration. The question of whether the urethra is or is not reparable is of course entirely irrelevant. All that matters is that one of the arteries should be intact. I have seen several cases of very severe penile laceration heal well, leaving an organ diminished in size and tied up with scar tissue, but still capable of erection and inviting plastic repair. The best treatment is certainly immediate and careful repair, to the extent to which this may be possible. But even if the surgeon in the casualty clearing station should feel that to attempt repair is hopeless, I would suggest that he should never go further than to trim the wound, ensure haemostasis, suture the skin so far as he can with nothing coarser than horsehair, wrap the organ, or what remains of it, in dry gauze (if completely sutured) or in cod-liver oil gauze (if the wound is wholly or partly open; if cod-liver oil, which is antiseptic, is not available, then in vaseline gauze), and splint the organ in the upright position, at right angles to the abdominal wall, to provide elevation and immobilization. This can be done with two pieces of pliable wire such as is used for a Böhler finger splint. One piece is bent as for a finger splint, well padded, and the penis fixed to it with strapping. The other forms an arch padded at each end and secured to the skin just above each inguinal ligament with strapping, and to which the penile splint is tied. The arch is then itself tied to a cradle placed over the patient. Suprapubic drainage of the bladder is of course provided, and the patient can be sent straight on to a plastic surgeon at the base.

There is, at the worst, nothing to be lost by such conservatism. The blood supply to the penis is such that it will survive as astonishingly as does the scalp. One need not be a psychologist to realize what it means to a man to retain the possibility of a normal sexual life.—I am obliged to sign myself

A Former Surgeon to the International Brigades.

Anaesthesia in War Time

Sir,—In your issue of November 25 (p. 1057) Dr. Priestman expresses a wish that all who teach anaesthetics should put certain "N.B.s." The first one interested me very much: "'Remember the significance of and difference between conjunctival and corneal reflexes.'" Surely the day is long past when anaesthetists take either of these reflexes. Sticking fingers into patients' eyes seems to me to savour of barbarism. In the *Journal* many years ago a paper was written by an ophthalmic surgeon who said: "The man who takes the corneal reflex shows the hall-mark of an incompetent anaesthetist." I have never seen that statement challenged.

I teach my students that all patients are blind; therefore there are no corneal reflex to obtain and no eyes to damage. The corneal and conjunctival reflexes are very superficial at the best, and I do not think surgeons would be overjoyed at having to operate in the presence of either of these. The eye is much too delicate a structure to use for anaesthetic signs, and with present-day premedication it is of very little value as a sign. During anaesthesia the eye should be kept covered and carefully guarded from outside irritation, such as ether vapour, bright light, and corneal attacks by anaesthetists. The most common cause of the condition known as "anaesthetic eye" is corneal damage by irritation and not, as formerly supposed, by ether or chloroform being spilled into it.—I am, etc.,

J. B. H. Holroyd, D.A.,
Anaesthetist, Sheffield Royal Infirmary; Instructor in Anaesthetics, Sheffield University.

Sheffield, Nov. 25.

Sir,—Your leading article on anaesthesia in war time (*Journal*, November 11, p. 958) stimulates me to send one more contribution on this important subject. It is one which specially concerns the general practitioner, and for the past ten years I have been trying to improve my technique with, I believe, some success. As you rightly say, ether will be the anaesthetic most commonly used, but though relatively safe it has various drawbacks, which I have tried, within the limits of general practice, to eliminate.

I think that anyone who has used morphine and atropine before anaesthesia cannot deny the benefit they confer, but unfortunately their use completely upsets the action of the pupil so that its size can no longer be used as a reliable guide to the depth of anaesthesia, as it could before morphine and atropine were used. With the inexperienced anaesthetist the depth of anaesthesia is the thing he is most bothered about, and nervousness on this point is perhaps the greatest cause of poor administration. Basal anaesthesia is also a great comfort to the patient, but to those not accustomed to it it adds other complications, and, furthermore, the technique of administration is not always possible in war conditions.

Just about the time that avertin was becoming popular, but before it was safe enough to be used in cottage hospitals, I stumbled on a combination of drugs which proved to give me practically all the advantages that avertin offered, together with relief from the two difficulties mentioned above. I have since used it, sometimes as surgeon and more often as anaesthetist, in over 300 major operations of various types in persons varying from 18 to 85 years of age, and although the dosage may seem heavy it has proved remarkably safe. About an hour before the operation the patient receives a subcutaneous injection of morphine hydrobromide 1/4 grain, hyoscine hydrobromide 1/100 grain, and atropine hydrobromide 1/200 grain (Tab. Hyoscinae Co., P. D. and Co.) and an intragluteal injection of somnifaine 2 c.cm. The latter has had a chequered career as an anaesthetic which I need not detail, but it has the valuable property that it is slightly mydriatic, with the result that the combined action of these drugs is found to leave the pupil practically normal, so that the size of the pupil proves once again a useful guide to the depth of the chloroform or ether anaesthesia. The amount of ether required is about half that which would be required without the addition of somnifaine, post-anaesthetic vomiting is greatly reduced, and amnesia is complete in about 90 per cent. of cases and usually continues for about twenty-four hours. There is a long post-anaesthetic sleep, usually about six hours, and though to some this may seem dangerous it has not proved so in practice, and it has the great advantage for war work that the useful time during which this combination works for anaesthesia is from three-quarters of an hour to three hours after administration, the ideal being between one and one and a half hours after. Where operations cannot be timed to the minute this is a considerable advantage for a basal anaesthetic. Actually it is my usual practice shortly after the patient has begun to recover from the anaesthetic, and been made comfortable from the nursing point of view, to give another 1/4 grain of morphine if he is at all restless, and this usually suffices for eighteen to twenty-four hours. The next night I follow this with a tablet of dial, which seems to act better than the other barbiturates on this night, unless there is much pain, in which case more morphine may be required, or a tablet of veramon with the dial. Occasionally two sonalgin tablets will succeed very well. With this scheme of dosage it is usually found that about three weeks after the operation the patient will have no clear memory, or complete amnesia, of the events of the first three or four days after the anaesthetic, and in the stress and horror of war work this ought to go a long way in reducing the number of psychological casualties among the injured.

One unexpected virtue of this combination is that under it the patient is noticeably free from shock. Pulling on the peritoneum and removal of a large organ or tumour, which in the ordinary way would be liable to cause marked shock under the anaesthetic, with this technique seem to affect the patient very little. This is not to excuse rough surgery, but it does help the anaesthetist by diminishing the trouble which an inexpert surgeon can cause him, and as the anaesthetic is a rather slow-moving one there is little chance of the patient suddenly collapsing or coming round at an awkward moment, and this diminishes the trouble an inexpert anaesthetist can cause the surgeon. There is usually a slight fall of blood pressure, 10 to 20 mm. Hg, but, as I say, shock seems much less than normal. However, should an analeptic be required there is none which, in my experience, can compare with cardiazol-ephedrine when this technique has been employed. I might add that the more I use oxygen the more am I pleased with its results, though it is by no means essential.

There remain the undoubted facts that post-operative shock is more marked after chloroform and ether than after nitrous oxide, etc., and also that both ether and chloroform are protoplasmic poisons which act specially deleteriously on the liver. This also has engaged my attention, and, though my observations are purely clinical and the deductions pure hypothesis, I believe that I have found out something of real help here too. When working with injections of concentrated solutions of vitamins A and D (now known as dekadexolin) I noticed that post-operative shock—as distinct from the shock during anaesthesia mentioned above—was practically absent if an injection of dekadexolin was given at the time of the operation. This observation has been so constantly repeated during the past eight years that I think it is indisputable. It has led me to suppose that some at least of the shock and poisoning action of the volatile anaesthetics is due to the fact that they are both powerful fat solvents and so, *a priori*, liable to interfere with the proper functioning of the fat-soluble vitamins stored in the liver. Whether this is so or not there is no doubt that when these patients are followed back into the wards they remain clinically in a much better condition than those who have not been so treated, and it is very rarely that any of them require even a rectal saline. Where relatively untrained nurses may have to be employed this also is a considerable advantage.

I am well aware that such a bald outline as can be given in a letter lays me and my methods open to many criticisms, but I also know that valid criticism can only come after a personal trial, which I trust that any would-be critics will hasten to make. After the experiment I believe that they will agree with me that, where conditions are not ideal or skilled team work is impossible, these three easily administered injections do in fact procure for patient, surgeon, and anaesthetist an ease and safety in ether anaesthesia unattainable by any other method. And with this it has advantages for war surgery which I have tried briefly to indicate.—I am, etc.,

Winsford, Cheshire, Nov. 23. W. N. LEAK, M.D.

Gas Injuries to the Eye

SIR,—I have been very interested in the letters which have appeared in the *Journal* on the subject of gas injuries to the eye, and note the comments of Colonel L. T. Poole and Professor J. H. Burn. I have had a fair amount of experience of these cases and have tried every therapeutic measure available. For more than two years I have confined my treatment to cod-liver oil and liquid paraffin. No other therapeutic measure has given a satisfactory result. Contact glasses may even do harm, as two of my cases have had the cornea perforated by this means. Colonel Poole, in his letter of November 25, stresses the instantaneous action of mustard gas, and when one notes this point it will be seen that the first-aid treatment is the same as the later treatment. Atropine will relieve the photophobia, but cod-liver oil is the essential. Dr. N. Pines mentions protein shock, but my own experience shows that this is useless, and also, be it noted, should be supplanted in the treatment of gonococcal ophthalmia by M & B 693.—I am, etc.,

Wolverhampton, Nov. 25. H. CAMPBELL ORR.

Blood Group Distribution in England

SIR,—As a consequence of the present emergency the blood group of a large number of persons has been determined in this laboratory. The distribution among the first 5,000 is recorded here. In every case the blood was taken from the finger into 3.8 per cent. citrate solution and tested with anti-A and anti-B sera of a titre not less than 128. Lately we have used serum supplied by the Medical Research Council through the Galton Laboratory Serum Unit, Cambridge, which we have found to be excellent. The tube method described by Thomas and Hewitt (*J. ment. Sci.*, 1939, **85**, 667) was used, except that the reactions were read by eye after two hours at room temperature and that the tubes were put up in specially designed racks of twenty-five rows. From a preliminary series of parallel tests we came to the conclusion that this method was superior to all others from the points of view of speed, accuracy, and convenience, and that it is the only one suitable for mass grouping. Naked-eye reading was made necessary by the large number of tests which were set up at one time, and which on occasion ran into many hundreds. All the tests were made by one or more of a team of three people, and it is with possibly pardonable pride that we can record the taking of 134 blood samples in twelve minutes. The rate at which the tests can be set up depends upon individual experience, but 300 an hour is not excessive for one person.

The observed proportions among this sample were:

Group	O	A	B	AB	Total
f	2233	2162	444	161	5000
p	0.44660	0.43240	0.08880	0.03220	1.00000
σ_p	± 0.00703	0.00700	0.00402	0.00249	

The gene frequencies calculated from this data and corrected for the initial observed value of D (Bernstein, O., *Z. Indukt. Abstamm. Vererb.*, 1930, **56**, 233) are:

$$\begin{aligned} p' &= 0.26842 \\ q' &= 0.06248 \\ r' &= \underline{0.66911} \\ & \quad 1.00001 \end{aligned}$$

The observed values are in good agreement with the theoretical sum of unity (D′ = 0.00001). The D/σ_D test gives $\sigma_D = 0.000025$ and $D/\sigma_D = 0.4$, so that the statistical fit for the series is also excellent.

This and our subsequent data will be fully treated in a future publication. The present figures have been communicated to the Galton Laboratory Serum Unit in response to the appeal of Professor Fisher and Dr. Taylor for inclusion in their national data.—I am, etc.,

JOHN C. THOMAS,
Major R.A.M.C.

Military Hospital, Shenley,
Herts, Nov. 23.

Bipp

Sir,—While the times are surgically quiet I should like to draw the attention of all who are connected with war surgery to a paste which was used with marked success during the war of 1914-18, the so-called bipp. I saw this used myself with unfailing regularity and almost never-failing success. One of the leading consultant Army surgeons during that war gave to me the opinion that of all the antiseptics used at home or in France none had so great a value.

The process, briefly, is: (1) a clean dissection of the damaged and infected tissues; (2) a liberal smearing or filling up with bipp. The wound granulates from below upwards and needs no further dressing, thus saving an immense amount of pain and nursing labour.

We must learn from the lessons of the past; a substance whose value proved so remarkable after four years of unprecedented surgical experience must come again into the field of operative surgery. For the sake of those who would put to the test this pain-saving invention I submit the formula given to me; the formula in which 25 per cent. paraffin was used as a basis was not so successful.

Bismuth subgallate	4 ounces
Iodoform	8 „
Liquid glucose .. .. or q.s.	3½ „
Balsam of Peru	4 drachms

Fiat pasta.

I trust that this method of dealing with wounds will be given a thorough trial during this war.—I am, etc.,

Folkestone, Nov. 27. Austin Priestman.

Injection Treatment of Hernia

Sir,—Mr. A. Simpson-Smith (*Journal*, November 18, p. 990) remarks that the difficulties of injection treatment of inguinal hernia have compelled many surgeons to give up this procedure. That in skilled hands it can be entirely satisfactory I have had ample confirmation. I have seen many cases treated by Surgeon Commander St. G. B. D. Gray, R.N.V.R. (now on active service). The results were excellent. There is no doubt in my mind which form of treatment I would plump for if I had a hernia.—I am, etc.,

London, W.1, Nov. 28. A. Ernest Sawday.

Treatment of Varicose Ulcers

Sir,—Being in charge of a very large varicose vein and ulcer clinic I was naturally interested in the letter from Dr. J. R. A. Davies appearing in your issue of November 25 (p. 1060). I should like to make the following comments.

In my experience true varicose ulcers are seldom multiple and are never associated with deep abscesses that need opening. Dr. Davies (in the one case he describes) attributes the spread of the *Staph. aureus* infection (to parts of the body remote from the legs) to "the damming-up of foul stinking septic discharges." After a careful study of his report it would appear that there is nothing upon which one could base his assertion of the spread of the infection from the legs to other parts of the body; it would appear at least equally probable that the boils and abscesses broke out everywhere (axillae, groins, and legs) as a manifestation of the one general infection, and that it was this infection that caused the temperature and general illness and not the occlusive dressings.

In such a case as is described Dr. Davies obviously adopted the correct treatment. I do, however, most seriously join issue with him when he condemns the modern miraculously successful treatment of varicose ulceration (by the tight binding up of the whole foot, ulcer, and leg with elastic adhesive bandages) merely because this treatment had been applied unsuccessfully to one isolated case which, on the face of it, was not one of true varicose ulceration, but one of multiple body abscesses, including the legs.

Every ulcer seen on a leg is not necessarily varicose. A Wassermann is often helpful (even in real varicose ulceration); and, when indicated, concomitant anti-syphilitic treatment is instituted. Even, however, in cases of syphilitic ulcers the elastoplast treatment is a valuable adjuvant. At my own clinic the tight "occlusive" bandaging up of ulcerated legs leads to regular cure. Large ulcers can be "expedited" by the placing over them of pieces of specially prepared sponge rubber. It is frequently our practice first of all to put cod-liver oil into the ulcer cavity under the sponge rubber. In other cases, if there be much purulent discharge, the ulcer is first filled with calomel powder or T.C.P. powder.

I write this "answer" to Dr. Davies in no sense of carping criticism, but merely because one cannot allow to pass unchallenged destructive criticism of a treatment that has brought rapid cure of untold pain and suffering to countless thousands throughout this country. After all, this "occlusive" tight bandaging treatment is on the same lines as the most successful "occlusive" method of treating compound fractures by the Winnett-Orr method.—I am, etc.,

Liverpool, 1, Nov. 30. Stuart McAusland, M.D.

Virtues of Brown Bread

Sir,—A very few years ago a letter advocating whole-meal bread would have provoked a lively and somewhat acrid discussion on the respective merits of white and whole-meal. This is no longer the case. Professor Geoffrey Taylor's letter (November 18, p. 1022) has so far been allowed to pass without comment. Your own annotation of August 5 (p. 289) was a masterly presentation of the large mass of experimental evidence that you had accumulated, proving the great superiority of whole-meal over white judged by every criterion. Your exposition aroused no response whatever apart from my own letter, which you were good enough to publish on August 19 (p. 426). The reason must, I think, be that the superiority of whole-meal is no longer in dispute. Why then are we still a white-bread-eating nation? And why do thousands of medical men themselves eat white bread although they know it to be inferior to whole-meal?

The remedy I suggested in my letter was for all medical men (*a*) to advise their patients to eat whole-meal bread, and (*b*) to insist on being supplied with whole-meal for their own use. Professor Geoffrey Taylor's suggestion is that the British Medical Association should urge the Government to legislate to encourage, if not to compel, the universal eating of whole-meal instead of white bread. This would be an ideal plan, but it might take some time to mature; meanwhile I would plead with the medical profession to adopt my suggestion, which, of course, is an obvious and not a new one.—I am, etc.,

London, W.1, Nov. 25. Alfred C. Jordan.

Sir,—With all the prominence given to food and its rationing it is surprising that so little attention has been accorded to brown bread in the dietary. It is an important source of the accessory food principle vitamin B_1, so advantageous for the healthy functioning of nervous and unstriped muscle tissue, while for many persons it has an actual relish not obtaining in white bread.

In Italy since the beginning of totalitarianism brown bread is compulsorily supplied by the bakeries, for it is recognized there that not only is the quality enhanced but the quantity is also increased—seven loaves in place of six for the same quantity of grain. In England a "colour prejudice" is apparently extended to food, especially among the poor and uninformed.—I am, etc.,

Netley, Nov. 26. Arthur King.

Oestrogens: Natural and Synthetic

Sir,—Your statement in the *Journal* of November 25 (p. 1048) that no differences have been observed between the actions of the natural oestrogenic hormones and the synthetic product (stilboestrol) fails to take into account the recently published findings of two Dutch workers (Duyvené de Wit, J. J., and Bretschneider, L. H., *Klin. Wschr.*, 1939, 18, 1423), who describe an absolute qualitative difference in the actions of the natural and synthetic oestrogens. They found that while oestradiol, oestrone, and oestriol were definitely active in the Bitterling test, stilboestrol caused no reaction in doses one hundred times those of the natural oestrogens.

Quantitative differences are, of course, numerous.—I am, etc.,

Horsham, Nov. 25. N. HOWARD JONES.

A Testicular Tumour

SIR,—In view of the rarity of tumours of the testicle and of their apparent association with the undescended organ, I send you the following account of a case which you may like to record.

An African patient aged about 40 was admitted to hospital recently under my care. He had a history of a lump coming and going in the region of the left inguinal ring, for an unknown but considerable length of time; recently this had been increasing in size and becoming painful, and had remained at the external ring. On examination the lump resembled a hen's egg sitting on the external ring; it felt rubbery and was painful; there was only one testicle in the scrotum. At operation, kindly performed for me in my absence by Dr. Billington, there was degenerating grumous material in the centre of the mass, which appeared to be the testicle undergoing malignant change. The tumour was removed locally, as a more extensive operation did not seem justifiable. But the wound has already broken down and oedema of the scrotum and feet has developed.

The pathologist's report is as follows: Dense stroma and epithelial cells and lymphoid tissues in haphazard arrangement; congestion and some inflammatory reaction. The condition appears to be a teratoid tumour of an undescended testicle. It contains some rapidly proliferating cells and is probably malignant.

With regard to the frequency of testicular tumours in England, I find that the majority of figures approximate to that of 0.06 per cent. from an investigation of a series of 110,000 male cases admitted to a general hospital. Of this series, 16 per cent. are recorded as occurring in the undescended testicle (other series show 11 per cent. and 12 per cent.). I regret I cannot find strictly comparable figures for the incidence of undescended testicle, but it is recorded that 0.45 per cent. of a series of 2,000 public schoolboys had this abnormality. If these two sets of figures were comparable it would suggest that 2 per cent. of undescended testicles become malignant. I have no significant figures for the incidence of these conditions in this country, but I have seen nothing to suggest that they would be very different from those in England.—I am, etc.,

R. B. LEECH, M.B., B.Ch.Cantab.

Mengo Hospital, Kampala,
Uganda, Oct. 6.

Sigmund Freud

SIR,—Having just returned to my desk from a prolonged summer stay, I find your issue of September 30, 1939, awaiting me. I have read with much interest the obituary notice of Sigmund Freud and am presuming to compliment you upon its accuracy, its completeness, and, above all, its understanding. The *British Medical Journal* has for many years stood high in my estimation for its outstanding service to medicine and the medical profession. This fair-minded and sympathetic obituary has served to increase my admiration for the many high qualities of the *British Medical Journal*.

Freud himself tells us he spent but six months with Charcot and not a year as stated, but this slight error is of little significance. Furthermore, also of minimal importance, was not his contact with Breuer earlier than 1884? Also " cancer " should read " sarcoma " if one wished to be exact pathologically, but as the distinction is not known to many physicians the broad term " cancer " will suffice.—I am, etc.,

New York, Nov. 16. SMITH ELY JELLIFFE.

Obituary

SIR WILLIAM PROUT, K.C.M.G., M.B.

Lieutenant-Colonel Sir William Prout, K.C.M.G., late Colonial Medical Service, died at the Manor House, Lingfield, Surrey, on November 18, aged 77. He was born in 1862, the son of William Prout of Mauritius, and educated at Edinburgh, where he graduated as M.B. and C.M. in 1884. He entered the Colonial Service in 1885 as assistant poor law medical officer in Mauritius, but in 1888 was transferred to West Africa, where he spent the rest of his service, first as assistant colonial surgeon of the Gold Coast; in 1895 he was appointed colonial surgeon of Sierra Leone, medical officer of health of Freetown, and Official Member of the Legislative Council, with the rank of principal surgeon, which he held till his retirement in 1906 after thirty years' service. He then settled in Liverpool, where he was a lecturer in the Liverpool School of Tropical Medicine, and in 1912 was appointed medical officer to the Colonial Office. During the war of 1914–18 he served in Egypt as a lieutenant-colonel in the R.A.M.C., and was twice mentioned in dispatches. After the war, in 1919 he was appointed senior medical officer to the Colonial Office and in 1927 senior consulting physician for that office, resigning in 1929. He was made C.M.G. in 1905, O.B.E. in 1919, knighted in 1924, and created K.C.M.G. in 1928. He had been a member of the British Medical Association since 1898; at the Annual Meeting in 1910 he was honorary secretary, and in 1912 vice-president, of the Section of Tropical Diseases. In 1888 he married Mary, daughter of John Mackenzie of Montrose, and had one son and one daughter; the son was killed in the war of 1914–18.

NAUGHTON DUNN

Mr. T. P. McMurray writes:

The death of Naughton Dunn at the early age of 54 years has deprived the British Orthopaedic Association of its president, a post he had held during 1938 and 1939. His association with orthopaedic surgery began before the last war, when he became house-surgeon to the late Sir Robert Jones in the year 1911. His holding of this post was the beginning of an unbroken association and friendship between the two men, which lasted until Sir Robert's death. Leaving Liverpool in 1913, he became connected with the problem of the cripple in Birmingham and district when he was appointed surgeon to the Birmingham Cripples Union, the forerunner of the present Royal Cripples Hospital in Birmingham. In 1915 the formation of military orthopaedic centres was found to be necessary, and Robert Jones, who had been given complete charge of its organization, called on Dunn as one of the few men who were adequately trained to carry out the work. Dunn's work during the strenuous war period was magnificent, and earned for him a great reputation among his colleagues and assistants. Returning to Birmingham after the war, he continued his work at the Royal Cripples Hospital and at the Robert Jones and Agnes Hunt Orthopaedic Hospital at Oswestry, an institution in which he played a particularly vital part. His reputation was world-wide as a sound progressive orthopaedic surgeon who had added much to our knowledge, particularly in regard to the surgery of deformities of the feet. He received many honours, but of them all probably the one he treasured most was the honorary LL.D. which was conferred upon him by his own University of Aberdeen. He was connected with many hospitals in the Midlands, both in an active and in an advisory capacity, and held the very important post of lecturer in orthopaedic surgery to the University of Birmingham.

WILFRED TROTTER

Dr. C. Wynn Wirgman writes:

In your noble tribute to Wilfred Trotter his friends and pupils will feel that justice has been done to one who was certainly among the great men of the age. None ever sought counsel of him but they felt that he spoke as one of the oracles of God. I was intimately associated with him for years, and I cannot remember an occasion or opinion where he was at fault. No doubt he was wrong sometimes, but personally I never found him so. All knowledge seemed his province, and his teaching to those who were fortunate enough to sit at his feet was complete and final. His opinion on a medical case was as reliable as that on a surgical one. Simplicity, modesty, and altruism were the keynotes of his character. His loss makes the world poorer and adds a name to the list of the world's great dead.

"G. H. S." writes:

Your biographer has rightly stressed Mr. Wilfred Trotter's awe-inspiring mental calibre, which was liable to produce an oaf-complex in his disciples if it did not already exist, and has relegated his operative skill to second place. But what was secondary in him was as the brightness of Sirius in relation to his contemporary surgical "stars." Of how many others could it be said, as was true of him, that it was a perfect joy to watch him remove a simple appendix: the knife handled as Vermeer must have wielded his brush, the needle with the finesse of an embroidress, and above all the surpassing gentleness of manipulation? Alas, that we so rarely encounter such a complete surgical artist, in the best sense of both words, in whom an outstanding intellect is happily wedded to true art, but so frequently find surgeons possessing these qualities in the single state.

With the death of **Benjamin Sumner**, M.D., M.Ch., on November 3, at his residence in Warren Road, Blundellsands, at the age of 76 years, Liverpool and its northern suburbs have lost one of their best known and highly esteemed practitioners, who had been a member of the British Medical Association for fifty-three years. Dr. Sumner studied medicine at the Liverpool Royal Infirmary and University College, London, qualifying in 1885. During his studentship he was awarded the Lyon-Jones Scholarship at the Liverpool Royal Infirmary. In 1889 he was appointed honorary physician to the Bootle General Hospital (then the Bootle Borough Hospital). Having interested himself in gynaecology, which was becoming a special subject, he was in 1908 appointed honorary gynaecological surgeon to the hospital, resigning the post of honorary physician. He remained gynaecologist to the hospital until he retired from the active staff in 1923, when he was appointed consulting gynaecological surgeon. For many years Dr. Sumner had been vice-president and also vice-chairman of the general committee of his old hospital. "W. R. R." writes: By Dr. Sumner's death his fellow practitioners, and especially his younger colleagues, have lost a great friend who was only too glad to help them with his knowledge, gained from his vast experience. His familiar figure riding his pet horse will be greatly missed by the residents of Crosby. He died in harness as was his wish, having done his usual work up to three days before the end, though owing to a serious cardiac lesion work during the last few months must have required great endurance.

Dr. **Frederick Richard Brefks Atkinson**, who died suddenly in London on November 18 in his 73rd year, was educated at King's School, Canterbury, and Edinburgh University, where he graduated M.B., C.M. in 1891 and proceeded to the M.D. in 1896. After two years at sea as ship surgeon he took up the work of a general practitioner first at Dulwich and then at Chertsey, but he early devoted himself to the study of tuberculosis. On the establishment of the national health insurance scheme he was appointed tuberculosis medical officer by the Middlesex County Council and spent the rest of his working life in this post. In his leisure time Dr. Atkinson translated for the New Sydenham Society Sternberg's monograph on acromegaly and other foreign medical works, and himself wrote a book on acromegaly which appeared in 1932.

Dr. **William Cecil Whiteside** of Fazeley died on November 18 at the age of 69 years. He was a son of the Rev. Stephen Whiteside, vicar of Shap, Westmorland. A student at Trinity College, Dublin, and at the University and Royal College of Surgeons, Edinburgh, he obtained the degrees of M.B., Ch.B.Ed. in 1909. In 1912 he went as assistant to Dr. Thomas Buxton at Fazeley, and on the latter's death in 1916 succeeded to the practice. He also took over the appointments of medical officer and public vaccinator for the Fazeley district and Wilnecote and Middleton, which he held until his retirement from the profession just over a year ago. For many years he had been honorary surgeon to the Wilnecote Division of the St. John Ambulance Brigade, a movement in which he was keenly interested. Dr. Whiteside is survived by his widow and one daughter.

Dr. **G. T. Eccles** died at Worthing on November 25 aged 73. He studied medicine at Cambridge and St. Bartholomew's Hospital, and graduated B.A. in 1887, M.B., B.Ch. in 1892, and M.A. in 1918. Before taking up practice at Hove he had been house-surgeon and house-physician at the West London Hospital and assistant medical officer in the electrical department at St. Bartholomew's. "J. H. C." writes: Dr. George Tolcher Eccles practised in Hove and was the borough police surgeon for nearly forty years, and his memory will long be kept alive in the town by the very many kindnesses he did for so many people. His generosity was only one of his many excellencies. He had a dominant personality, and in any gathering he was outstanding. He was one of a medical family, and he was himself typical of his generation of trusted family doctors. Of late years his chief interest was in fly-fishing. He was also a prominent Freemason and president of the Devonian Society in Brighton and Hove for three successive years.

Dr. **Harold Everett Pace** died at his home in Goring-by-Sea, Worthing, on November 26 at the age of 71. Six years ago he retired from general practice in Leyton, E.10, where he had practised for over a generation. A Londoner by birth, Dr. Pace studied medicine at the London Hospital, qualifying in 1893. He held posts at "the London" as house-surgeon and house-physician, and took his M.B. degree in 1897. He served as civil surgeon with the African Field Force during the South African War. Apart from that his whole career was spent in general practice in Leyton, where his familiar figure was known to two generations of Leytonians. "D. S." writes: Dr. Pace was one of the finest types of men to be found in the profession, much liked and trusted by his patients and highly esteemed by his fellow practitioners. He was district medical officer to the Essex County Council and public vaccinator. He retired from practice on reaching the age limit and went to live at West Worthing. During the great war his house in Leyton was completely destroyed by a Zeppelin bomb, and it was marvellous how any of the family escaped alive. A few years ago he lost a son in the Royal Air Force. Dr. Pace bore these trials bravely, but there is no doubt they adversely affected his health. He leaves a widow and a son and daughter. He had been a member of the British Medical Association for twenty-four years.

The death is announced of Dr. **Edmund Herbert Corder** of Worcester, aged 76. He was educated at Queen's College, Birmingham, and qualified in 1886 as L.R.C.P., L.R.C.S.Ed. and L.R.F.P.S.Glas. After holding the post of resident surgical assistant at the Queen's Hospital, Birmingham, Dr. Corder began practice at Worcester, and for over twenty-seven years was poor law medical officer for No. 2 District; he was also appointed honorary surgeon to the Worcester Dispensary and for a time acted as anaesthetist at the Worcester General Infirmary. He was a most popular medical officer and had a large private practice. For six years he served on the city council and during the last war devoted much time to the local medical board. He retired from active work about four years ago because of failing health. Dr. Corder first joined the British Medical Association in 1887.

The following well-known foreign medical men have died: Dr. Heinrich Neumann, formerly professor of oto-rhino-laryngology in Vienna, in New York, aged 66; Dr. D. G. Stiefler, extraordinary professor of neurology at Innsbruck, aged 62; Dr. Auguste Pettit, professor at the Pasteur Institute of Paris, member of the Academy of Medicine, and author of works on anti-poliomyelitis serum and spirochaetosis ictero-haemorrhagica, aged 70; and Dr. Carl Gustaf Santesson, emeritus professor at the Karolinska Institute, Stockholm, and editor of *Skandinavisches Archiv für Physiologie*, aged 77.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The Faculty Board of Medicine gives notice that as from October 1, 1939, it has withdrawn approval of courses in pharmacology held at institutions outside Cambridge, but students who on October 1, 1939, had gone out of residence without attending the course in Cambridge may make application to the secretary of the Faculty Board for leave to attend courses given elsewhere.

UNIVERSITY OF WALES

Welsh National School of Medicine

The following candidates for the degrees of M.B., B.Ch. have satisfied the examiners in the examinations indicated.

Pathology and Bacteriology.—J. D. P. David, A. A. Edwards, W. M. Jones, J. Lewis, Monica Parry-Morton, D. K. W. Picken, K. M. Wheeler, J. Williams, O. Williams, G. A. Wright.

Obstetrics and Gynaecology.—*Beryl Badham, T. C. H. Davies, D. I. Harries, Marguerite J. Hennelly, D. D. Howell, O. Howell, G. A. Jones, Anne N. M. Llewhelin, J. E. Lloyd, R. M Marshall, D. G. Morris, H. V. Roberts, Glenys J. Wade.

Pharmacology.—J. D. P. David, Sadie M. Davies, *N. E. France, W. S. Hill, E. H. Horton, Margaret W. Hughes, Morfudd E. Humphreys, R. T. James, E. R. Jones, D. K. W. Picken, Erica M. G. H. Roberts, Huw D. Walters, O. Williams.

Surgery.—H. R. Hudd, M. Lewis, Mair Llewelyn, Silvia M. D. Mehta, D. G. Morris, R. E. Packer, J. L. Rees.

* With distinction.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

Surgery.—J. B. Gurney-Smith, A. M. McCall, M. F. Smith, K. Talboys.

Medicine.—G. O. C. Davies-Webb, R. M. J. Franks, E. A. Griffiths, W. C. Heunis, J. N. Hunt, J. A. Sutton.

Forensic Medicine.—G. O. C. Davies-Webb, R. M. J. Franks, E. A. Griffiths, W. C. Heunis, J. N. Hunt, J A. Sutton.

Midwifery.—C. E. S. Myers, J. P. Rochford.

The diploma of the Society has been granted to W. C. Heunis and J. A. Sutton.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At the annual meeting of the Royal College of Physicians of Edinburgh, held on November 30, Dr. Alexander Goodall was re-elected President, and the following were elected to form the Council for the ensuing year: Dr. Edwin Bramwell, Dr. Charles McNeil, Dr. A. Fergus Hewat, Dr. D. M. Lyon, Dr. W. D. D. Small, and Dr. A. Graham Ritchie. Dr. McNeil was nominated Vice-President.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a meeting of the Royal Faculty of Physicians and Surgeons of Glasgow held on December 4, with Dr. J. Souttar McKendrick, President, in the chair, the following were admitted Fellows of Faculty: James Paton Orr Erskine, M.B., Ch.B. (Glasgow), Alexander Slessor, M.B., Ch.B. (Motherwell).

Medico-Legal

DISSOCIATED PERSONALITY

The tragic case in which Dr. L. P. Lockhart was found guilty of the murder of his wife but insane[1] showed very clearly the application of established legal principles to a somewhat unusual set of facts. The doctor had been badly shocked in the last war, and there was plenty of evidence of his emotional instability before the act. He was proved to have written a notice, "Keep out; gas (study). Fetch police," to have given his wife an injection of sodium evipan, to have placed her and himself on the floor by a gas fire, and to have turned on the gas. The defence sought to prove that he had done these things unconsciously in a condition in which his personality was suppressed and the automatic powers of the body took charge. Serjeant A. M. Sullivan, K.C., pointed out that this was not an insanity defence but that, as the doctor had committed the act during unconsciousness, he should simply be found not guilty. Eminent psychiatrists agreed that the facts, if true, showed a genuine state of dissociation, and that in such a state a series of highly complicated and apparently rational acts could be performed automatically and not remembered.

In order to set up an insanity defence it is necessary to prove that the accused person, owing to mental disorder, either did not know what he was doing or did not know that it was wrong. If, however, a person kills another in a state of unconsciousness the obvious inference is that he was labouring under mental disorder. In his summing-up the learned judge indicated some disagreement with the suggestion that Dr. Lockhart really was quite unconscious of his acts, but said there was evidence on which the jury could find that he had been insane and not responsible for them; the jury found this evidence convincing. Even if the unconsciousness had been proved beyond any doubt, it was manifestly due to disorder of the mind; the unfortunate patient was shown to be a danger to himself and others; and it was necessary in his interests as well as those of the community that he should come under the care of the State and be suitably treated. Incidentally, it is interesting and encouraging to observe the progress the courts are making in their recognition of dissociated states in which the offender is not responsible for his actions and is hardly, if at all, conscious of them. They do not yet, however, recognize the state, sometimes called "irresistible impulse," in which the action is just as dissociated and automatic but the offender is conscious of it and of its illegality. Nor does the law of England permit a verdict of "Not guilty on the ground of insanity," preferring the illogical formula "Guilty but insane." One of His Majesty's judges a short time ago directed the jury in a similar case that they might find the accused guilty of the act charged but by reason of disease of the mind not responsible at law. Such a formula is more merciful as well as more logical. Moreover, those who desire to see a verdict of "not guilty" follow a successful insanity defence must remember that no legislation is likely to take away the prerogative right of the Crown to take care of an insane person who has committed a crime until he can safely be allowed to re-enter the community.

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[1] *British Medical Journal*, November 25, p. 1063.

"*Surgical Addiction*."—In an excellent paper is described the unfortunately familiar type of patient whose psychological state becomes successively worse with each of the many operations which he or she has successfully induced surgeons to perform. The phrase "surgical addiction" indicates the psychological homology between this and other types of addiction.—Surgical Addiction: Case Illustration. P. Greenacre. —*Psychosomatic Med.*, April, 1939, **1**, 325.

The Services

DEATHS IN THE SERVICES

Colonel Henry Halcro Johnston, C.B., C.B.E., late R.A.M.C., died on October 18, aged 83. He was born at Orphir House, Orkney, on September 13, 1856, the fifth son of James Johnston, eleventh Laird of Coubister, Orkney, and was educated at Dollar Academy, at the long-defunct Collegiate School of Edinburgh, and at the University of Edinburgh, where he graduated M.B., C.M. in 1880. He proceeded M.D. in 1893 and in the same year took the B.Sc., proceeding D.Sc. (Public Health) in 1894. He entered the army as surgeon on July 30, 1881, attained the rank of colonel on February 16, 1911, and retired on September 13, 1913. In his young days he was a noted rugby footballer, having played as full-back for Scotland against both Ireland and England in 1877. He did not again receive an international cap, but for three years he played as a forward in the Edinburgh University fifteen. He had a fine list of war service: Sudan, 1885, at Suakin, medal with clasp and Khedive's Star; North-West Frontier of India, 1897–8, in charge of British No. 1 Field Hospital, operations in the Malakand, in Bajaur, in the Mahmund country, and in Buner, including the action at Laudakai and the attack and capture of the Tanga Pass, mentioned in dispatches, April 22, 1898, medal with clasp; South Africa, 1899–1902, operations in Natal, mentioned in dispatches, February 2, 1901, and July 29, 1902, Queen's medal with clasp and King's medal with two clasps, and the C.B. After retirement he rejoined for service in the war of 1914–18, when he served as Assistant Director of Medical Services at Glasgow and at York, and as Deputy Director of Medical Services at Gibraltar, and received the C.B.E. He was the author of numerous contributions to scientific journals. After retirement he settled at Orphir, in his native island of Orkney, where he was a deputy lieutenant of the county. He was unmarried.

The Bibby liner *Yorkshire* was torpedoed and sunk by a German submarine with much loss of life. She had on board a total of 278, of whom 160 were ship's complement, the remainder passengers, chiefly officers and soldiers with their families on the way home from the East. The company reports that 33 passengers were missing, chiefly women and children. Among those lost was Lieutenant-Colonel William Leonard Eliot Reynolds, M.C., R.A.M.C. He was born on April 4, 1889, was educated at Guy's Hospital, and took the M.R.C.S., L.R.C.P. in 1915. He at once entered the Royal Army Medical Corps, Special Reserve, as a temporary lieutenant, took a commission as lieutenant and temporary captain on January 1, 1917, became captain on August 1, 1918, and major on February 2, 1927, and was promoted to lieutenant-colonel in August this year. He served throughout the war of 1914–18, in which he gained the Military Cross. He had been a member of the British Medical Association since 1927. He was Deputy Assistant Director-General, Army Medical Services, War Office.

Lieutenant-Colonel Charles Henry Straton, R.A.M.C. (ret.), died at Exmouth on November 1, aged 63. He was born on May 16, 1876, was educated at St. Mary's Hospital, and took the M.R.C.S., L.R.C.P. in 1898, and subsequently the D.P.H. of the Colleges in 1911. After serving as house-surgeon at St. Mary's Hospital and clinical assistant at the Great Ormond Street Hospital for Sick Children and at the Central London Ophthalmic Hospital, he entered the Royal Army Medical Corps as lieutenant on April 25, 1900, became lieutenant-colonel on December 26, 1917, and retired on August 20, 1921. He served throughout the war of 1914–18, chiefly in the Mediterranean, where he acted as Assistant Director of Medical Services in Egypt. He received the Order of St. Sava of Serbia (4th Class), as well as the war medals. After his retirement he settled in Devonshire, where he was school medical inspector to the Devon County Council at Honiton. He was a member of the British Medical Association for thirty-eight years.

Lieutenant-Colonel George Fowler, Indian Medical Service (retired), died suddenly at Keynsham, near Bristol, on November 13, aged 65. He was born on April 29, 1874, and educated at Madras and Charing Cross Hospitals. He took the Scottish triple qualification in 1895, after gaining the L.M.S.Madras in 1894. He also took the D.P.H. of the London Colleges in 1899, and the D.T.M.Lond. and D.T.M. and H.Cantab. in 1908. Entering the I.M.S. as lieutenant on June 27, 1901, he became lieutenant-colonel on December 27, 1920, and retired on April 29, 1929. He was appointed a Civil Surgeon in the Central Provinces in May, 1914, but reverted to military employ during the war from January, 1915, to October, 1919. He had been a member of the British Medical Association for thirty-eight years.

Major George Baillie, R.A.M.C. (ret.), died suddenly at West Runton on October 26, aged 66. He was born on March 1, 1873, the youngest son of the late Dean Baillie of Letterkenny, Co. Donegal, and was educated at Trinity College, Dublin, where he graduated M.B., B.Ch., B.A.O. in 1900. He entered the Army as lieutenant in the Royal Army Medical Corps on January 21, 1900, became major on June 21, 1912, and retired on August 1, 1920. He served in the war of 1914–18.

Major Pierce Morgan Brett, R.A.M.C. (ret.), died at Salisbury on November 26, aged 54. He was born on May 23, 1885, was educated in Ireland, and graduated M.B., B.Ch., B.A.O. of the Royal University of Ireland in 1909. He entered the Royal Army Medical Corps as lieutenant on January 27, 1911, became major on November 25, 1927, and retired immediately afterwards but continued to be employed at Salisbury in the Reserve of Officers after retirement. He joined the British Medical Association in 1926 and served as honorary secretary of the Salisbury Division in 1936–8. He leaves a widow.

Medical Notes in Parliament

In the House of Commons on December 5, during the debate on the address, Dr. Elliot said that he had that morning received from Lord Nuffield the offer of a million ordinary share units of Morris Motors Limited, equivalent to perhaps £1¼ million, as the nucleus of a central fund for the co-ordination of hospital finance and policy in the provinces, which he had accepted forthwith (see p. 1148).

The debate on the address continued during the week and was largely concerned with supplies for the fighting Services. In the House of Lords Lord Halifax spoke on British war aims.

The Postponement of Enactments (Miscellaneous Provisions) Bill was down for second reading in the House of Commons on December 6. It proposes to postpone the operation of the House-to-house Collections Act to a date to be fixed by Order in Council.

Hospital Accommodation in Scotland

In the House of Commons on November 21 a discussion took place on hospital problems in Scotland. Colonel Colville said that they had secured some 12,000 beds in existing hospitals for the treatment of casualties, and this number could be increased at short notice to 14,500. Adaptation of mental hospitals and three large hotels should give them, in a few months, some 5,100 additional beds, and hutted hospitals and annexes now being built 10,000 more. In all the programme would give them some 31,000 beds. The needs of the ordinary sick and of military cases were not being overlooked. Hospitals included in the scheme were expected to admit all persons who might fairly be said to be in urgent need of institutional treatment. Arrangements were being made under which the additional hospital accommodation would be available for the ordinary sick if they could not obtain treatment elsewhere. He was issuing a small brochure on the hospital services which would give the information in some detail.

Army personnel in urgent need of institutional treatment were admitted to hospitals in the Emergency Service in the same way as civilian patients. Arrangements had also been made at the request of the Deputy Director of Medical Services, Scottish Command, whereby accommodation was being made available for 500 Army sick who required light hospital treatment which could not be afforded in hospitals controlled by the military authorities. The patients were being admitted, in the main, to base hospitals on the understanding that they would be evacuated as rapidly as possible if the hospital beds were required for the purposes of the Emergency Service. An extension of this arrangement, to cover some several hundred additional patients, was under consideration.

First-aid Posts

On November 21 Sir JOHN ANDERSON, in reply to Mr. Denville, said that the attention of public authorities had already been drawn to the importance of providing direction boards to first-aid posts, but he was informed by Dr. Elliot that it was not generally considered necessary to provide direction boards to hospitals; ambulance drivers learnt the routes as part of their training. The police had already been in consultation with the hospital authorities about traffic arrangements with a view to securing that ambulances should arrive and depart in the shortest possible time.

On November 21 Dr. ELLIOT told Mr. Denville that he was not aware that at certain aid posts the access to those parts set aside for the decontamination of gas casualties was so restricted by sandbags that a stretcher case could not be admitted, but he would look into any case of which Mr. Denville forwarded particulars.

Dr. ELLIOT also informed Mr. Denville that supplies of the antiseptic called azochloramid had already been distributed so as to be available at first-aid posts.

Medical Board Examinations

In reply to Dr. Howitt on November 23, Mr. ERNEST BROWN said his information did not confirm a statement by the former that many men passed fit by medical boards had soon been found to be unfit for service. He was carefully examining the position. Dr. HOWITT asked Mr. Brown to ensure that all such mistakes were at once reported to the medical board which passed the man as fit so as to prevent recurrence of such mistakes. Mr. BROWN replied that he would consider this suggestion. A few cases had been brought to his notice, and in these he had always arranged for a re-examination.

Dr. HOWITT asked whether it would be possible for the boards to have power to refer doubtful cases to specialists before the men were passed. Mr. BROWN stated that he was examining suggestions of the kind. Each medical board consisted of a chairman and four other medical men.

Women in Industry and Infant Mortality

Mr. DAVID ADAMS asked Sir John Anderson on November 30 whether, in view of the severe increase in infantile mortality during the last war, special observations were being made for the protection of the health of women in industry; and in what circumstances the Government's permission must be sought with regard to the working of overtime by women, and upon what principle this permission was granted. Sir JOHN ANDERSON recalled that the War Cabinet Committee on Women in Industry reported in 1919 that the influence of employment upon the infant mortality rate was not altogether clear, but observed that the rates were low in 1916 and 1917, when a continually increasing number of married women were being employed. He said that special observation would be kept, in consultation with the Industrial Health Research Board, on the working conditions of women and others in factories during the present war. As regards women's hours of work, the hours authorized, while varying according to circumstances, were far shorter than those which were commonly worked in the last war. They were being kept under review.

Social Services to be Expanded

In the House of Commons on December 5 Dr. ELLIOT said that when we were planning for a three-years war and spending at the rate of £2,400,000,000 a year in the process we still contemplated some expansion in our social services. The money invested in these had provided an excellent return. We had now a lower infant mortality and a lower maternal mortality than Germany. Before the outbreak of war the national service of midwives set up by the Midwives Act, 1936, was settling down to full-time work. The first steps had been taken to set up the comprehensive arrangements for the treatment of cancer, for which provision was made in the Cancer Act. Over 4,000,000 houses had been built since the last war and we had entered upon the fifth million. The President of the Board of Education and he hoped shortly to complete arrangements for a far greater concentration of medical effort on the school children than ever before. The process which had added inches in height and nearly a stone in weight to school children was still going on. During the war the aim must be to keep in working order this vast machine, improving it from time to time as conditions permitted. He hoped it would be possible to complete the bulk of the houses started by local authorities before the war, to complete all those which were being built for factory workers and agricultural workers, and, subject to the financial position, eventually to enable local authorities and private enterprise to build new houses for such workers.

Payment of Medical Boards

On December 5 Mr. GROVES asked the Minister of Labour and National Service what fees were payable to members of civilian medical boards for the examination of recruits, having regard to the notification to doctors by the British Medical Association confirming the appointment containing the statement that an appropriate fee, to be settled in consultation with the Association, would be paid for each session. Mr. ERNEST BROWN replied that members of medical boards were paid at the rate of two guineas a session for the first five sessions in a week, and 1½ guineas for any subsequent sessions in the week, an additional half-guinea being paid to the chairman. These rates applied uniformly to all medical boards.

Functions and Inspection of First-aid Posts

On December 5 Mr. GROVES asked the Minister of Health how he reconciled the instructions that the seriously injured were to be taken direct to hospitals and not to first-aid posts with the terms of E.M.S. Memorandum No. 4 issued by his Department. Dr. ELLIOT said that although the first-aid posts were intended primarily for the lightly injured it was recognized that some of the more serious cases might require early treatment at first-aid posts in certain circumstances—for example, if the nearest casualty receiving hospital was much further away than the first-aid post and the patient appeared to require immediate treatment. This was indicated in the opening paragraph of E.M.S. Memorandum No. 4.

Dr. ELLIOT also informed Mr. Groves on December 5 that the medical officers of his Department who inspected first-aid posts were specially experienced in the organization of casualty services. In making their inspections they adopted such procedure as in their judgment was best suited to the circumstances of the area. Any changes or adjustments were normally settled by them on the spot, in agreement with the medical officers of health, who were assisted by the medical officers appointed to each post; but if necessary they were the subject of communications between the responsible local authority and himself.

Central Medical War Committee

On December 5 Mr. GROVES asked the Minister of Health whether the Central Medical War Committee was the same as the Central Emergency Committee of the British Medical Association, having regard to the answer on November 16 and the statements made in the British Medical Association circular D.17/1939–40. Dr. ELLIOT said that the Central Emergency Committee assumed the functions of the Central Medical War Committee shortly after the outbreak of war.

Equipment at First-aid Posts.—Mr. GROVES asserted on November 30 that the official equipment of first-aid posts contained no provision for the accommodation of recumbent cases, whether adults or children. Dr. ELLIOT replied that stretcher cases would normally be taken to hospitals and not to first-aid posts. Adequate provision was made under the official scheme for recumbent cases at first-aid posts by stretchers and blankets issued to each scheme-making authority and by trestles which could be purchased out of the furniture allowance of £15 per post

Medical Officers for A.R.P.—Dr. ELLIOT told Mr. Groves on November 30 that he would not be justified in advising local authorities that medical officers of an age which made them likely to be called upon for military service and without practical experience of war wounds should not be employed as deputy medical officers of health for air raid precautions purposes or placed in charge of first-aid posts. Local authorities, guided by the advice of their medical officers of health, were employing suitable medical officers in these services.

Approved Societies' Additional Benefit.—Dr. ELLIOT states that some modification of the normal procedure for dealing with approved societies' schemes of additional benefits has been made in the present exceptional circumstances with the object of saving work on the part of societies and of the seriously depleted staffs of the Department and the Government Actuary. Under the new procedure a suitable scheme of benefits, so far as possible identical with that at present in force, is recommended to the society for adoption. If any society desires to submit alternative proposals consideration is always given to any representations which they may make. This procedure does not differ in any material respect from that adopted by the Department of Health for Scotland.

Notes in Brief

No women doctors are serving in the Women's Auxiliary Air Force, but the appointment of a limited number of women doctors primarily for duty with that Force is receiving consideration.

In a statement on November 22 about the British troops in France Mr. HORE-BELISHA said their health was exceptionally good, the sickness rate being lower than the peace-time rate at home.

Medical News

In September last it was decided, in consequence of the war, to postpone the Chadwick Public Lectures which were to have been delivered this autumn. The Trustees have now resolved to resume the lectures, if national conditions permit. The first lecture is to be delivered on Tuesday, December 12, at 2.30 p.m., at the Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W.1, when Sir William Savage, M.D., will discuss "The Health Aspects of Canned Foods." Admission is free.

As Patron of St. Bartholomew's Hospital the King has accepted a specially bound copy of *Rose Window*, the book published by Heinemann's in aid of St. Bartholomew's Hospital. As President of the Hospital His Royal Highness the Duke of Gloucester has accepted a similar copy, and has expressed the hope that the volume will bring in a good sum. The book (illustrated by Anna Zinkeisen) consists of twenty-five hitherto unpublished contributions by famous authors. It costs 7s. 6d.

The 1939 Nobel Prize for Chemistry has been divided between Professor A. Butenandt, director of the Kaiser-Wilhelm Institute for Biochemistry, Berlin, for his work on sex hormones, and Professor L. Ruzicka, of the University of Technology, Zurich, for his work on polymetylenes and higher terpene compounds. The reserved 1938 Prize for Chemistry has been awarded to Professor R. Kuhn, Heidelberg, director of the Kaiser-Wilhelm Institute for Medical Research, for his work on carotinoids and vitamins. The Nobel Foundation has decided not to hold the usual festivities in connexion with the distribution of the prizes this year.

The secretary of the London Lock Hospital informs us that the out-patient departments for both sexes at Dean Street remain open as usual, and the Lock should therefore have been included in the list of London hospitals out-patient departments appearing last week at page 1105. The out-patient department of the Metropolitan Ear, Nose, and Throat Hospital (Fitzroy Square, W.) is now open every weekday from 10 a.m. to 11.30 a.m.

The name of the National Baby Week Council is now changed to National Baby *Welfare* Council, this name being more commensurate with the increased scope of work falling to the Council's lot under war conditions. The address of the National Baby Welfare Council is 29, Gordon Square, London, W.C.1.

On October 24 a meeting was held at the St. Louis Medical Society in honour of Dr. William Washington Graves, professor of neuropsychiatry, St. Louis University School of Medicine, and Dr. Graves was awarded a certificate of merit and a gold medal for scientific accomplishment for his classification of scapulae and other inherited characters, and for his discovery of "the age-incidence principle of investigation." The St. Louis Medical Society has given this certificate of merit for scientific accomplishment on two previous occasions: in 1927 to Dr. Evarts A. Graham and his associates, Drs. Glover H. Copher, Warren H. Cole, and Sherwood Moore, for their work in cholecystography; and in 1935 to Dr. Edward A. Doisy for his achievements in hormone chemistry and physiology.

Professor R. T. Leiper, Professor H. S. Raper, and Professor W. W. C. Topley have been elected members of the Council of the Royal Society for the ensuing year.

Dr. A. Douglas Cowburn retired on November 18 from the post of H.M. Coroner for the Southern District of the County of London.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

The rise in the prevalence of diphtheria and scarlet fever in England and Wales referred to last week has not been maintained. The increase in pneumonia (influenzal and primary) continues, but the extent is negligible, and deaths from influenza are well below last week's figure, although they exceed that of the corresponding week of last year. There has been a tendency for the incidence of cerebrospinal fever to increase in the last few weeks, but in no locality have the numbers recorded amounted to more than minor outbreaks. The total 37 cases recorded in England and Wales were distributed over as many as seventeen administrative counties, and in only three were there more than 3 cases—namely, Denbigh 6 (all in Wrexham M.B.); Glamorgan 5 (Rhondda 2, Caerphilly, Cardiff C.B., Merthyr Tydfil, 1 each); Lancaster 5 (Swinton and Pendlebury 3, Liverpool 1, Rochdale 1). Acute poliomyelitis has fallen to less than one-third of last year's level. Among the twelve counties involved Somerset only had more than a single case: 1 each in the rural districts of Wincanton and Yeovil. The urban districts were more frequently affected than rural districts.

Notifications of both measles and whooping-cough show an increase of more than 50 per cent. over those recorded last week. In all probability some part of the increase is attributed to more complete notification. In some localities measles has already attained epidemic proportions. For instance, of 414 cases in Glamorgan 214 were in Caerphilly and 101 in Rhondda U.D.; of 166 cases in the West Riding of Yorks 95 were in Thorne R.D. and 26 in Skipton R.D., compared with 5 in Sheffield. Other striking examples of unusual prevalence in certain areas are: Cumberland 105 (33 in Ennerdale); Warwick 119 (81 in Leamington); Gloucester 68 (29 in Cheltenham). On the other hand, there were only 2 cases in Leicester County (none in Leicester itself), 6 in Middlesex, and 13 in London. In six counties in England and four in Wales no case of measles was recorded during the week—namely, Berks, Isle of Ely, Norfolk, Soke of Peterborough, Rutland, West Suffolk, Carmarthen, Montgomery, Pembroke, and Radnor. It is evident that the expected measles epidemic is beginning in rural and urban areas rather than in the large towns, to which it will doubtless spread in the next month or so. How far this is due to the abnormal distribution of non-immunes consequent upon evacuation and how far it is a natural phenomenon cannot be determined with certainty as comparable figures for previous epidemics are not available.

No. 46

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended November 18, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	37	1	10	7	1	15	3	10	3	2
Deaths		—	1				—	1		
Diphtheria	963	29	227	53	45	1,530	160	288	86	35
Deaths	29	1	2	3	2	22	3	2	5	1
Dysentery	46	1	39		—	42	11	18		—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	1	—	—	1	—	5	—	—	—	—
Deaths		3	—				1	—		
Enteric (typhoid and paratyphoid) fever	22	—	5	3	1	31	11	8	5	2
Deaths	1	—	—	1	—	3	2	—	—	—
Erysipelas			72	6	9			73	8	7
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years										
Deaths	31	3	7	8	1	40	8	7	4	3
Measles	1,830	13	18		28		23	22		2
Deaths	1	—	—	—	—	—	—	—	—	—
Ophthalmia neonatorum	81	4	21		—	69	6	28		—
Deaths										
Pneumonia, influenzal*	637	46	8	4	19	723	104	15	5	17
Deaths (from influenza)	31	8	3	1	—	21	1	3	2	3
Pneumonia, primary			139	5				392	11	
Deaths		9		8	9		1		8	11
Polio-encephalitis, acute	1	—				2	—			
Deaths		—					—			
Poliomyelitis, acute	13	1	—	—	—	45	5	6	2	1
Deaths		—	—				—	—		
Puerperal fever	—	—	11	1	—	7	7	22	4	—
Deaths		1†					1†			
Puerperal pyrexia	174	6	28		4	180	15	21		1
Deaths										
Relapsing fever	—	—		—	—	—	—		—	—
Deaths										
Scarlet fever	1,359	34	240	68	96	2,072	179	396	48	100
Deaths	1	—	1	—	1	1	1	1	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,334	35	25		7		160	293		17
Deaths	3	1	2	—	—	8	3	2	2	2
Deaths (0-1 year)	270	39	55	29	16	294	41	87	16	14
Infant mortality rate (per 1,000 live births)						49	34			
Deaths (excluding stillbirths)	4,494	715	612	185	121	4,274	805	603	210	134
Annual death rate (per 1,000 persons living)			12.4	12.4	10.6	10.5	10.3	12.3	14.2	11.9
Live births	5,485	664	757	286	222	6,388	1,208	844	351	204
Annual rate per 1,000 persons living			15.3	19.2	19.5	15.7	15.4	17.2	23.8	18.1
Stillbirths	235	35	41			273	30			
Rate per 1,000 total births (including stillborn)						41	24			

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Death from puerperal sepsis.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

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The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the Office of the Cumann Doctúirí na h-Éireann (I.M.A. and B.M.A.), 95, Merrion Square, W., Dublin (telephone 62550 Dublin).

QUERIES AND ANSWERS

Income Tax

Change in Employment

"M. T." ceased his employment in 1938–9 and accepted another appointment for 1939–40 at a higher salary. On what basis should he be assessed?

⁎⁎ The correct legal basis is that adopted by the inspector of taxes—that is, to regard the first source of income as having ceased and consequently the present employment as a new one, carrying the liability to assessment for the first year on the actual earnings of that year. We understand, however, that where the two employments are substantially similar and continuous the authorities are willing to disregard the change and continue to apply the previous year's basis. If the income of 1939–40 should fall short of the anticipated (and therefore the assessed) amount redress can be obtained before the second instalment of tax falls due for payment next July. Another reply in this issue covers "M. T.'s" question with regard to expenses; in any case private removal expenses are not allowable.

War Work—Travelling Expenses

"M.," a retired practitioner, receives 30s. a day for full-time work at a military reception centre. He has to motor eleven miles a day between home and the centre, and also has to incur mess expenses. What can he deduct?

⁎⁎ The remuneration is chargeable under Schedule E, and the relative rules as judicially interpreted do not permit the deduction of such expenses. Consequently we have to advise "M." that he has no claim.

LETTERS, NOTES, ETC.

Economy in the Kitchen

The Food Education Society, 29, Gordon Square, London, W.C.1, has published a leaflet, prepared at the instance of the St. Pancras Council of Social Welfare, entitled "Help and Health for Housewives." The hints given are as follows:

> Save your baker's bill by buying whole-meal bread. It is far more nourishing than white bread and you need less of it.
>
> Save your stale bread. Cut it in thin slices and dry in a slow oven to make "scrunch," which children love. It is good for teeth and digestion.
>
> Save your cabbage and other vegetable water. It is a splendid drink: a good medicine and a favourite with children. Use it also for soup and gravy.
>
> Save time and money by cooking potatoes in their skins. This will give you the highest food value and the best flavour.
>
> Save your butcher's bill by eating more herrings and cheese. Whole-meal bread, margarine, cheese, and apple make a perfect meal.
>
> Save fuel and labour by sometimes giving children, instead of puddings, apples, oranges, dates, and figs, which contain natural sugar.
>
> Save labour and firing by eating more raw salad, such as watercress, tomatoes, celery, finely chopped raw heart of cabbage, grated carrot, or onion, etc.
>
> Save by spending less on vinegar, sauces, pickles, and salt. Good cooking is spoilt by these additions.
>
> Save by avoiding ready-made food in packets. Why pay through the nose for breakfast cereals when whole-meal bread gives much better value?
>
> Save by using the stewing-pot more and the frying-pan less. This saves fuel and is better for the digestion.
>
> Save by chewing your food carefully and not drinking much at meals. Sip plenty of water on rising, in place of tea, and between meals. See that children get enough water to drink.
>
> Save both health and tea bill by avoiding strong or stewed tea. It plays havoc with digestion, nerves, and sleep. Never give tea to children. Milk or milk and hot water is excellent.

We are asked to add that the leaflet may be had in quantities at reduced rates—50 for 2s. 6d., 100 for 4s. 6d., 1,000 for £2.

Administration of A.R.P. Casualty Services

"C." writes: Dr. H. Mainwaring Holt, in his letter in the *Journal* of November 18 (p. 1021), uses the phrase, "Mobile units sound very attractive." They are lavishly equipped and staffed. There is one objection, however (there are others), which should be stressed. This is delay—long delay—before they are in a position to deal with their patients. During a recent exercise the "all clear" signal was given at 5 p.m., and the mobile unit arrived on the scene at 5.55 p.m. Casualties may have occurred at a time considerably earlier than 5 p.m.; say, 4.30 p.m. Presumably the injured could not have been attended to at the earliest in much under half an hour. Allowing fifteen minutes for the return by ambulance to the A.R.P. first-aid station or hospital, it would appear that well over two hours elapse before casualties can reach surgical help of hospital standard. In my opinion the most sketchy first aid, if rendered within half an hour, is preferable to this.

Crataegus oxyacantha

Dr. A. E. Sawday (Crouch End Hill, N.8) writes: I am curious to know why Dr. Frank Bodman (*Journal*, November 18, p. 1022), who I understand is attached to a homoeopathic hospital, uses a dose of 1 to 5 minims of tincture of crataegus rather than a homoeopathic dose.

An International Congress Postponed

Professor H. Burger, president, and Dr. A. Marres, honorary secretary, write from Amsterdam: The committee of the fourth International Oto-rhino-laryngological Congress regret that they are obliged to give notice of their decision to postpone the congress for an indefinite time. Our first circular letter was ready to be forwarded in August to the 8,000 oto-rhino-laryngologists whose addresses were known. It contains the information that H.M. the Queen of the Netherlands had graciously accepted the patronage of the congress. Four Ministers, the Governor of the province of Noord-Holland, and the burgomaster of Amsterdam were to be honorary presidents; delegates of H.M. Government were to hold a reception for the congress in the Amsterdam National Gallery (Rijksmuseum), and the Netherlands Oto-rhino-laryngological Society invited all members to the closing banquet. We thankfully mention that for the three main subjects nine well-known colleagues had promised to deliver reports; besides over twenty oto-rhino-laryngologists from several countries had already announced papers. We hope that the present horror will give way to better times, and that at some future date it may be granted to us to send our invitation once more to the oto-rhino-laryngological world.

An Apology by "Picture Post" to Lord Horder

Lord Horder writes: I shall be grateful if you will give space to the enclosed apology, which will appear in the next issue of a magazine called *Picture Post*. The paragraph is self-explanatory.

"*Apology to Lord Horder*

> "A private photograph of Lord Horder was published in our issue of November 27 without his knowledge or consent. Lord Horder has further drawn our attention to the incorrect description of himself as 'the King's Physician' and as having acted as physician to the late King George V. We take this early opportunity of expressing our regret to Lord Horder for the inconvenience and annoyance that have been caused him."

BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 16 1939

CLINICAL PORPHYRINURIA

WITH REPORT OF A CASE OF THE ACUTE IDIOPATHIC TYPE

BY

F. G. CHANDLER, M.D., F.R.C.P.

G. A. HARRISON, M.D.

AND

C. RIMINGTON, M.A., Ph.D., B.Sc.

(*From St. Bartholomew's Hospital and the National Institute for Medical Research*)

Porphyrinuria of such a degree that the abnormal colour leads to examination of the urine is rare (see below). Study of cases, however, may be of considerable importance in furthering our knowledge of the building up of haemoglobin and of the metabolism of pigments in the human body. Similar studies are clearly indicated in lesser grades of porphyrinuria which are not suspected from the colour of the urine but which require for their recognition quantitative determinations of, or special qualitative tests for, the porphyrins. Indeed, the separation of "clinical" or "frank" porphyrinuria from the lesser grades is obviously arbitrary, but has clinical value in two respects: first, the urinary colour itself calls for special investigation; and, secondly, it seldom happens that the porphyrinuria is clinically of paramount importance unless the urine is abnormal in colour. For these reasons discussion is here limited to clinical porphyrinuria.

Probably relatively few physicians in this country are familiar with the brilliant work of Hans Fischer and his colleagues on the chemistry of the porphyrins. Since studies of porphyrinurics and all hypotheses of the causes of porphyrinuria must be subject to this knowledge, it is essential to give at least a brief summary of it. Owing to the almost complete absence of a reasonable account of acute idiopathic porphyrinuria from British textbooks, our clinical experience of the case reported below should be of value.

Nomenclature and Summary of Chemistry of Porphyrins

Haemoglobin belongs to the group of chromoproteins and consists of globin united with a complex pigment, haematin. Haematin is an iron derivative of porphyrin. The porphyrins themselves contain no iron and are not proteins. Haemin is the hydrochloride of haematin. It has been known for many years that when iron is removed from haemin by the action of acids a porphyrin is formed, called "haematoporphyrin" by Nencki, its discoverer. It was for long assumed that the porphyrins in urine were the same, hence the employment of the term "haematoporphyrinuria," which is even now sometimes seen in clinical literature. Later it was shown that only by the use of mild reagents such as acetic acid and hydrazine upon blood or haemin is it possible to separate the corresponding porphyrin without alteration. This natural porphyrin is designated "protoporphyrin" ($C_{34}H_{34}N_4O_4$). Haematoporphyrin ($C_{34}H_{38}N_4O_6$), which results when a drastic reagent such as concentrated sulphuric acid is used, is a chemical artefact and not a naturally occurring substance. Hans Fischer showed that the main porphyrin in the urine in congenital porphyrinuria was different from protoporphyrin, and called it "uroporphyrin." The chief porphyrin in the faeces in the same disease was different again, and Fischer called it "coproporphyrin" (*syn.*, stercoporphyrin).

It has long been known that even in health the urine contains minute traces of a porphyrin. By working up enormous volumes this has been isolated and shown to be coproporphyrin. Nowadays, therefore, the term "porphyrinuria" is employed to denote an excretion of urinary porphyrin in excess of the normal amounts, and the porphyrins present may be coproporphyrin or uroporphyrin, or both. Similarly, the faeces may contain a mixture of porphyrins, but in this excrement the list is extended; in addition to coproporphyrin and uroporphyrin there may be protoporphyrin (by degradation of haemoglobin ingested or from haemorrhage into the gut), deuteroporphyrin (by degradation of haemoglobin or myohaemoglobin), and others.

Hans Fischer has synthesized haemin, which is easily prepared from blood in crystalline form (Teichmann's crystals), and has shown that it is $C_{34}H_{32}N_4O_4FeCl$, with the following structural formula:

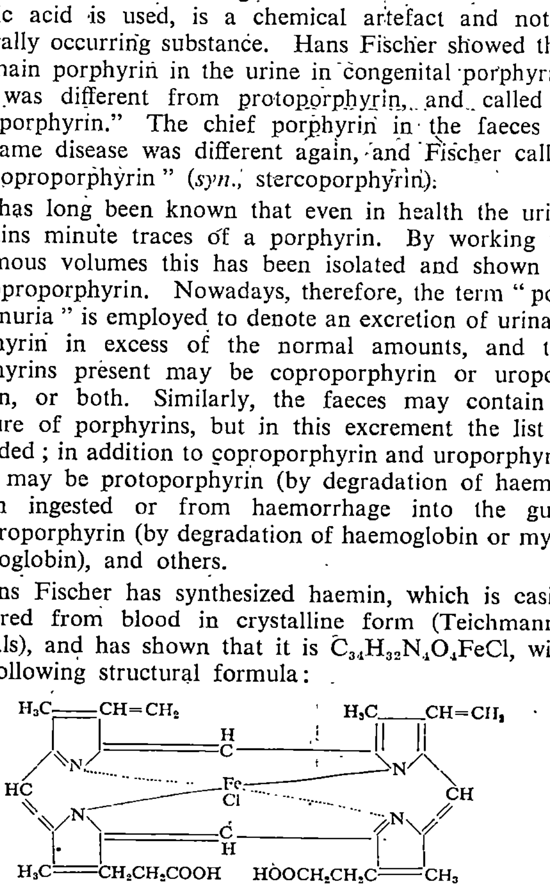


FIG. 1.—Structure of haemin.

Fischer and his colleagues have established the formulae of many of the porphyrins, some of which are given in the table below. The parent substance of them all is porphin, $C_{20}H_{14}N_4$ or $C_{20}H_6N_4.H_8$, with the following structure:

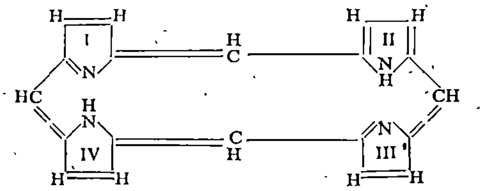


FIG. 2.—Structure of porphin.

The different porphyrins are obtained by substitution of different groups (methyl, ethyl, vinyl, acetic, propionic) for the hydrogens in the β, β' position in the four pyrrole rings of porphin. The corresponding haemins are obtained by attachment of Fe˙˙˙Cl to the nitrogens of the four pyrrole rings (see formula of protohaemin above). In the corresponding haematins (oxyhaematins) Fe˙˙˙OH, and in the reduced haematins Fe˙ (ferrous), is in the same position.

The following table summarizes the formulae of the substances which have been or are about to be mentioned:

Substance	Ring-structure	Side-chain Groups
Porphin	$C_{20}H_6N_4$	8H
Aetioporphyrin ..	$C_{20}H_6N_4$	$4(CH_3)$ and $4(C_2H_5)$
Protoporphyrin ..	$C_{20}H_6N_4$	$4(CH_3)$; $2(CH_2CH_2COOH)$ and $2(CH:CH_2)$
Haemin (protohaemin)	$C_{20}H_4FeClN_4$	$4(CH_3)$; $2(CH_2CH_2COOH)$ and $2(CH:CH_2)$
Coproporphyrin ..	$C_{20}H_6N_4$	$4(CH_3)$ and $4(CH_2CH_2COOH)$
Uroporphyrin ..	$C_{20}H_6N_4$	$4(CH_2COOH)$ and $4(CH_2CH_2COOH)$
Deuteroporphyrin ..	$C_{20}H_6N_4$	$4(CH_3)$, $2(CH_2CH_2COOH)$ and 2H
Bilirubin	Porphin ring opened	

This is complicated, but becomes more so when the fact is considered that numerous isomers of these compounds are possible, depending upon the order of arrangement of the substituent groups upon the pyrrole rings; Fischer *et al.* have synthesized many of these. There are fifteen possible isomers of protoporphyrin, but by suitable treatment a simpler porphyrin—aetioporphyrin—is obtained, of which there are only four possible isomers, designated, for convenience, aetioporphyrins I, II, III, and IV.

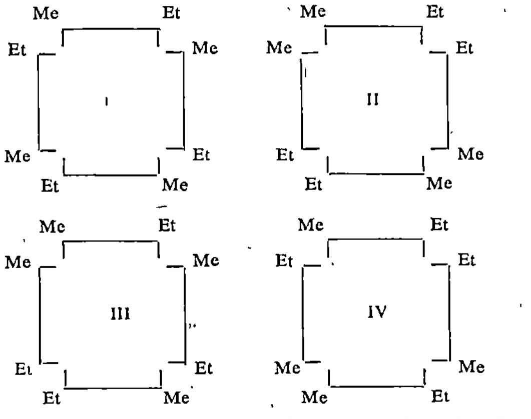


FIG. 3.—The four aetioporphyrins. Fischer's abbreviated formulae, showing positions of substituents in β, β' positions in pyrrole rings.

These may be regarded as the starting-point of four series of derived pigments, I, II, III, and IV. So far, in Nature porphyrins of the I and III series alone have been encountered, and the difference between these will be seen to lie only in the exchange of positions of two neighbouring groups in one of the rings. The structures of the naturally occurring coproporphyrins and uroporphyrins are reproduced in Figs. 4 to 7.

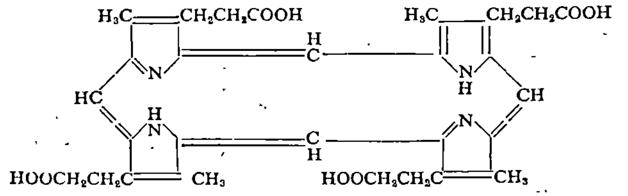


FIG. 4.—Coproporphyrin I: $C_{36}H_{38}N_4O_8$

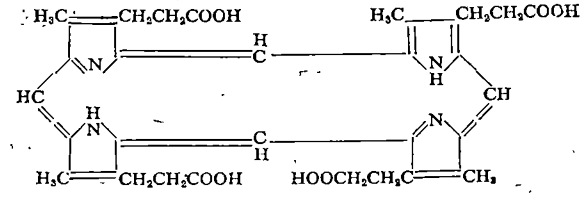


FIG. 5.—Coproporphyrin III.

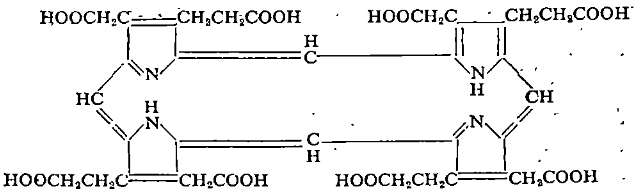


FIG. 6.—Uroporphyrin I: $C_{40}H_{38}N_1O_{16}$

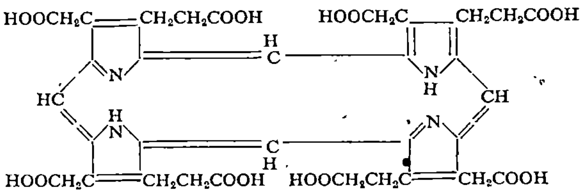


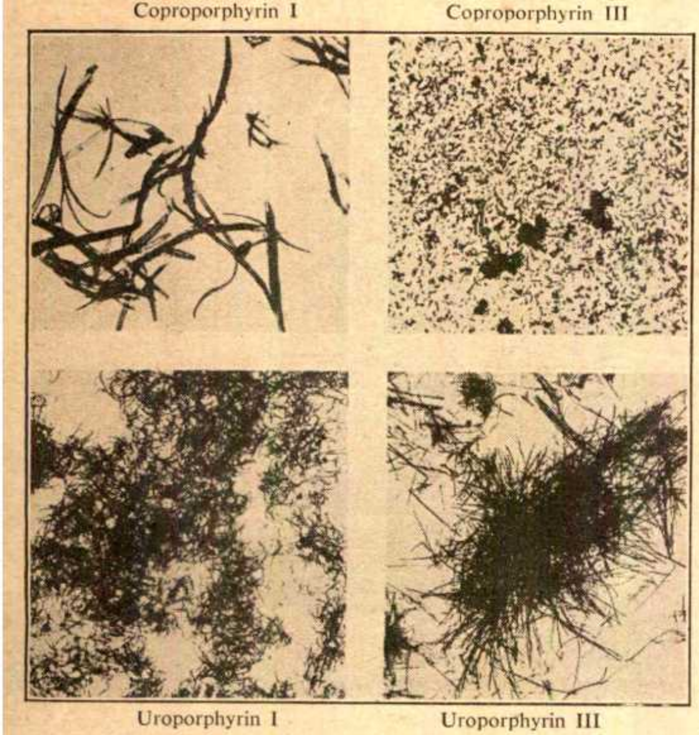
FIG. 7.—Uroporphyrin III.

Fischer *et al.* showed that haemoglobin and chlorophyll belong to series III, whereas the porphyrins in the excreta in disease belong mainly to series I. This is important, because it excludes the possibility of the porphyrins excreted in disease being derived by breakdown from haemoglobin. Passage from series III to series I would necessitate breakdown into the constituent pyrrole units and rebuilding into the new configuration—a sufficiently unlikely occurrence.

In addition to deciding whether the porphyrins in urine are coproporphyrin or uroporphyrin, or both, it is now necessary to show whether they belong to series I or III, or both, if data are to be obtained on which sound hypotheses can be built as to their origin.

In the methods employed in this work advantage is taken, as usual, of differences in solubility, crystalline form, melting-point, mixed melting-point, spectroscopic properties, etc. Since the free porphyrins do not possess sharp melting-points, they are converted into their crystalline methyl esters, which have well-defined melting-points for identification. So far as possible the investigations are carried out quantitatively; but they are laborious, and require considerable experience owing to the small amounts of the porphyrins and the complexity of biological fluids and tissues.

The melting-points of the methyl esters are: coproporphyrin I, 252° C.; coproporphyrin III, 145° C. (remelt 172° C.); uroporphyrin I, 302° C.; uroporphyrin III, 261° C.


Coproporphyrin I Coproporphyrin III

Uroporphyrin I Uroporphyrin III

FIG. 8.—Crystalline porphyrin esters. The uroporphyrin I ester was from bones (Rimington (1936), Fig. 13), the other three esters from the urine of our case of acute idiopathic porphyrinuria.

Wave-lengths (mμ) of Absorption Bands of Porphyrins

Acid Spectra (25 per cent. HCl):

Proto- .. 602 557
Copro- .. 594 551
Uro- .. 597 554

Alkaline Spectra (N/10 alkali):

Proto- .. 645 .... 591 .... 540 .... ?
Copro- .. 618 .... 569 .... 539 504
Uro- .. 612 .... 561 .... 539 504

Neutral Spectra (in ether):

Proto- .. 633 585 .... 576 .... 537 502
Copro- .. 624 .... 597 .... 578 .... 568 .... 529 498
Uro- .. Insoluble in ether.

Classification, Frequency, and Literature of Clinical Porphyrinuria

Adhering to the definition already given, there are three types of clinical porphyrinuria: (1) congenital (less than thirty cases published); (2) due to drugs, such as sulphonal, trional, etc. (about 100 cases published); (3) acute idiopathic, of unknown cause—about fifty cases recorded in the older literature; recently 103 from Sweden by Waldenström (1937). Several schemes of classification have been proposed, but need not be considered in detail here. Waldenström (1937) has recently made the suggestion that the term "porphyry" should be reserved to embrace conditions 1 and 3, in which the constitutional element predominates, while all other types of increased porphyrin excretion should be grouped under the heading "porphyrinuria."

The literature dealing with porphyrins and porphyrinuria is enormous, and in this brief summary only a few reviews and long articles can be mentioned, from which, however, the reader will have no difficulty in obtaining an introduction to it. Congenital porphyrinuria is dealt with by the late Sir Archibald Garrod (1923) in his *Inborn Errors of Metabolism*. Reference should also be made to Mackey and Garrod (1922, 1926) and to Garrod (1936). For the German work on the case of Petry, see Fischer, Hilmer, Lindner, and Pützer (1925) and Borst and Königsdörffer (1929). For congenital porphyrinuria in cattle, see Fourie (1936), Rimington (1936), and Fourie and Rimington (1938). Porphyrinuria due to drugs is reviewed by Günther (1922). Papers by Garrod and Hopkins (1894–6) and Drigalski (1937) contain interesting points. Increased porphyrin excretion in pellagra has been dealt with by Beckh, Ellinger, and Spies (1937). Acute idiopathic porphyrinuria is reviewed by Günther (1922). See also Mason, Courville, and Ziskind (1933), Waldenström (1934, 1939), Mertens (1937), Turner (1938), and Geissler (1939). For general reviews consult Fischer and Zerweck (1924), Fischer (1930), Carrié (1936), Vannotti (1937), Waldenström (1937), Hernando (1938), and Watson (1938).

Chief Signs and Symptoms of Clinical Porphyrinuria

Only the salient features are summarized in the following table. Further details concerning the acute idiopathic form are given below.

Type of Porphyrinuria	Congenital	Due to Drugs	Acute Idiopathic
Red urine	From birth	After much drug	Usually in adult life
Photosensitivity ..	Severe	Absent	Absent or very mild
Pigmentation of bones and teeth	Present	Absent	Absent
History of drugs ..	No	Yes	No
Abdominal and other toxic symptoms	None	Present	Present
Sex incidence.. ..	Mostly males	Usually females	Mostly females

A Case of Acute Idiopathic Porphyrinuria

The patient was a male insurance clerk aged 28, and was referred to St. Bartholomew's Hospital by Dr. K. R. Bali on September 19, 1938. He was under the care of one of us, complaining of severe abdominal pain, constipation, vomiting, loss of weight, occasional frontal headache, and insomnia.

HISTORY OF PATIENT

He had had measles and scarlet fever in childhood. In 1929 or 1930 he had pain over the whole abdomen, in occasional attacks, usually coming on ten to thirty minutes after a meal and frequently relieved by an alkaline powder. These attacks, each lasting about a fortnight, were separated by intervals of three or four weeks and became slowly more severe, until in 1937 he started to vomit. In 1937 his appendix was removed at Old Church Hospital, Romford; it was said to be chronically inflamed. Following this he had pneumonia and a left-sided pleural effusion. He left Romford much improved, but was admitted to St. Bartholomew's Hospital because the pleural effusion persisted. A skiagram of the chest revealed some dense calcareous foci in the right upper lobe, and the erythrocyte sedimentation rate was 49 mm. in the first hour. He was sent to Ventnor Sanatorium for six months, at the end of which period he was free from symptoms. There was never any specific evidence of tuberculosis, and never any haematemesis or melaena.

The patient believed it was in 1935 that he first noticed that his urine would sometimes darken on standing; darkening of the urine was not observed at Ventnor. In March, 1938, he had a bad attack of abdominal pain and vomiting, and his urine was red. There was no history of drug-taking, apart from the alkalis mentioned above, and six Dr. Cassell's tablets just before his final admission on September 19, 1938. His father suffered from disease of the kidneys, and passed urine the colour of blood. Two sisters and three brothers are living, but there is no history of any of them passing abnormally coloured urine. One sister died from pulmonary tuberculosis. There is no consanguinity between the parents.

The final attack started two weeks before his admission to St. Bartholomew's Hospital. He had been unable to keep anything down, and had no desire for food. He had lost a stone in weight in three weeks. On examination he was thin and sallow-looking. His whole body was a little brown, and this was most noticeable on his face, on which a few pigmented spots were present, but no scars. There was no patchy bronzing and no hypertrichosis. On the front of both knees there were six or seven round scars 1/4 to 1/2 inch in diameter, believed to be due to falls as a boy, but there were none on the elbows; he had a few septic spots on the trunk, each about 3 mm. in diameter. There was no definite evidence of photosensitivity. The eyes were normal, the tongue was furred, the teeth sound and not stained, and the mucous membranes were normal in colour. The temperature was occasionally 99°, but generally normal; the pulse was about 100, and the respiration rate normal.

EXAMINATION

Nothing abnormal was detected in the heart, and the blood pressure was 120/96. There were no physical signs in the chest, but a skiagram again showed the calcareous foci mentioned above; tubercle bacilli were not found in the sputum, which yielded a mixed growth of organisms in which pneumococci predominated. The erythrocyte sedimentation rate was 5 mm. in the first hour (September 21), and the Wassermann and sigma reactions were negative. There was generalized tenderness over the abdomen, but no mass was felt at first, and the liver and spleen were not enlarged. A barium meal on September 22 revealed nothing abnormal, and another on September 28 showed that though evacuation took a considerable time there was no evidence of obstruction. Tests for occult blood in the faeces were negative. Apart from brisk reflexes, nothing unusual was found in the nervous system.

The urine was normal in colour immediately after it was passed, but rapidly darkened, becoming deep brown or reddish brown in a few hours. Thus a sample received in the laboratory on September 21 was of a deep port-wine colour and acid in reaction; spectroscopically there were two absorption bands in the green very much like those of oxyhaemoglobin, and a band at the junction of the green and blue. Microscopically there were no red cells. Chemically there was a minute trace of protein, but the pyramidon test for blood was negative; Schlesinger's test for urobilin was strongly positive. By means of the tests given later it was shown without any doubt that the oxyhaemoglobin-like spectrum was due to a metallo-porphyrin. Subsequently many samples of urine were examined by two of us, and all showed the same behaviour, though of course the concentration of metallo-porphyrin and of urobilin varied. The effect of heat was as described under "Urinary Tests." One of us (for preliminary communication see Rimington, 1938a) separated the porphyrins from the urine and faeces by the methods outlined later.

The serum calcium was 9.3 mg. (October 24), the blood urea 52 mg. per 100 c.cm. (October 4), and no abnormal pigments were detected spectroscopically in the plasma or in the laked red cells (October 24).

CLINICAL HISTORY

The abdominal symptoms became worse, and occasionally the patient complained of pain in the arms, legs, and neck. By October 2 the cramp-like abdominal pain was so severe and the vomiting so frequent and distressing that he begged for something to be done. At this time a hard mass was felt in the epigastrium, which was slightly movable. A surgeon was called in, and agreed to operate, though very reluctantly, on the grounds that the lump was probably a malignant mass and the case hopeless. In spite of the fact that we knew there is intense spasm of the intestinal tract in acute idiopathic porphyrinuria, the one of us who was responsible for the patient's welfare urged operation because of the pain, the mass in the abdomen, and the fact that in many books porphyrinuria is described as associated with certain diseases of the stomach. It is possible that the last clinical point is not sound, and that there is no conclusive evidence of the association of organic disease of the stomach with clinical porphyrinuria; in that case the statement repeated in one textbook after another should be deleted.

A laparotomy was performed on October 12. The stomach was in extreme contraction, suggesting at first a leather-bottle stomach, this producing the apparent tumour. Otherwise nothing abnormal was found. The patient recovered quickly, and for some unknown reason was entirely free from symptoms for several days, and there was much less porphyrin in his urine. On October 17 the pain returned, and thereafter the porphyrinuria increased.

On October 19 Dr. Denny-Brown kindly made a neurological examination. He found no definite sensory changes, no convincing focal wasting, and only a general weakness. All the reflexes were brisk; there was no tenderness of muscles and no loss of vibration or position sense. He did not think there was a true peripheral neuritis, and felt certain that the pains were not neuritic.

The patient's condition rapidly deteriorated, and he begged for more and more opium. There is little doubt that he suffered acute and intolerable pain, and it would have been kinder to increase the dose of omnopon, which was kept within reasonable limits in the hope of recovery. Not obtaining the complete relief from pain for which he asked, the patient wished to be discharged, and on October 24 was transferred to the care of his own doctor. On October 25 he was unable to use his arms, and there was great weakness in the hands and legs. On October 27 his temperature was still normal, but he developed a cough. Increasing asthenia led to his death on October 28. A necropsy was performed, but unfortunately the pathologist was not aware of the findings in hospital, so there was no special study of the bones or central nervous system and no material was kept for chemical investigation. We do not consider, therefore, that a report of the findings would be of any value. (For post-mortem histology, cf. Geissler, 1939.)

During the patient's stay in hospital vigorous symptomatic treatment was instituted, which need not be detailed. Eight intravenous injections, each of 10 c.cm. of 10 per cent. calcium gluconate, were given, but afforded no relief.

Simple Urinary Tests in Porphyrinuria

The colour of the urine varies from brown to red, and is often described as "port-wine." Sometimes the fresh urine is more or less normal in colour, but slowly darkens so that in a few hours it is obviously abnormal, and ultimately may become deep reddish brown or almost black. This is due to the excretion of porphyrinogens and other chromogens of unknown constitution which are slowly changed in light and air to the corresponding porphyrins and pigments. It has been recognized for many years that the pigmentation is due mainly to the unknown pigments. To produce the change rapidly the urine may be heated at 100° C. for half an hour; the darkening starts in a few minutes and, so far as our limited experience goes, is complete in half an hour. Potassium permanganate and other oxidizing agents have been recommended to produce the change, but in our hands, though they might cause darkening, they did not produce porphyrins judging from spectroscopic examination. We therefore recommend that in routine examinations the urine be heated at 100° C. for half an hour before it is concluded that there is no gross porphyrinuria.

It is, of course, the examination with the spectroscope that establishes the diagnosis of porphyrinuria. In a typical case the four-banded spectrum of alkaline porphyrin is seen when the urine is examined in an ordinary boiling-tube (about 1 inch in diameter). The alkaline spectrum is seen at all natural reactions of urine; the acid spectrum is produced only by the addition of a mineral acid. Obviously the concentration of porphyrins varies, and it is necessary to have a working rule as to how thick a layer of urine shall be viewed before declaring a negative result. We suggest that clinical porphyrinuria can safely be excluded if a 4-inch or 5-inch layer* of urine does not show the absorption bands (compare Günther, 1922.) The effect of heat should, however, be tried as mentioned above; in highly pigmented urines it is impossible to see through so thick a layer, and the simple extraction method given below must be tried before concluding that there is no porphyrin.

A second important point in the spectroscopic examination is that occasionally the porphyrin is excreted as a metal complex, and the urine shows two absorption bands in almost the same positions as the bands of oxyhaemoglobin, instead of the typical four-banded spectrum. Careful observation reveals the fact that the β band is the more intense, whereas with oxyhaemoglobin it is the α band which is the darker. Wave-length measurements may be used to differentiate, but to make this conclusive it is necessary to use a reversion spectroscope (see later). Since the porphyrins contain no iron and are not proteins, negative chemical catalytic tests for blood (guaiac, pyramidon, reduced phenolphthalein, etc.), and negative tests for proteins, rule out haemoglobin; but, naturally, positive tests do not exclude a metallo-porphyrin. Confirmation of the presence of a porphyrin or metallo-porphyrin is easily obtained by adding a few drops of concentrated HCl or H_2SO_4 to about 10 c.cm. of urine, when the acid spectrum is obtained.

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* For a convenient method of varying the thickness, see *Biochem. J.*, 1938, **32**, 933.

As mentioned above, when the porphyrins are dilute or the urine is highly pigmented it is necessary to extract them for certain recognition. A simple method is to acidify about 15 c.cm. of urine with a few drops of glacial acetic acid and then to add about 5 c.cm. of ethyl acetate or of amyl alcohol. After shaking thoroughly, the mixture is centrifuged and the upper layer is transferred to another tube and examined spectroscopically, if necessary in a thick layer (cf. previous footnote). Shaking the extract with one drop of HCl produces the acid spectrum. This method does not give positive results with normal urines, but will detect slight increases in porphyrin excretion.

Some Special Investigations of the Urine and Faeces

By spectroscopic means it is impossible to differentiate between the series I and the series III isomers of the same porphyrin; indeed, the data already given show that careful measurements of wave-lengths are required to distinguish between the uroporphyrins and coproporphyrins, for the maximum difference between corresponding absorption bands is only of the same order as that between the bands of oxyhaemoglobin and of carboxyhaemoglobin respectively (about 60 A.U.). A differential estimation of the isomers, therefore, necessitates first a separation of the porphyrins from the urine.

Several methods have been proposed for this purpose. Nebelthau (1899) found that the addition of acetic acid to urines containing much porphyrin caused the formation of a slowly settling precipitate in which nearly all the porphyrin was included. To Garrod (1894–5) we owe one of the earliest procedures of a roughly quantitative nature. To 100 c.cm. of urine was added 20 c.cm. of a 10 per cent. solution of sodium hydroxide. This produced a precipitate of the earthy phosphates, upon which much of the porphyrin was adsorbed. After filtration the precipitate was washed off the filter paper by water and sufficient acid and alcohol added to dissolve it completely. The solution then showed the acid porphyrin spectrum. A calcium precipitate was used to carry down the bulk of the porphyrin as an adsorbate by both Salkowski (1890–1) and Dobriner (1936). Barium precipitates have been used for a similar purpose, and were also investigated by Salkowski. In our own case four volumes of 10 per cent. barium chloride added to ten volumes of urine produced a precipitate containing almost all the porphyrin, but it is probable that irregularities would be observed were this method to be tried upon a number of different urines (see below). Fink (1937), in his work on the isolation of the normal urinary coproporphyrin, employed with success a thick layer of paper pulp to adsorb porphyrin from the large bulk of urine acidified with acetic acid, and Grotepass (1938) similarly filtered large quantities of urine through infusorial earth in order to obtain enough pigment for chemical identification.

By far the most convenient and reliable technique, however, is that of chromatographic adsorption, using the Tswett column, and first applied to the particular case of the extraction of porphyrins from urine by Waldenström (1935); this is the method we have employed in the investigation of the present case and is described below in full.

As has already been pointed out, pathological urines may contain both uroporphyrins and coproporphyrins. A fundamental difference in physical properties exists between these two pigments—namely, the coproporphyrins may be extracted by ether from an aqueous solution solidified with acetic acid, while the uroporphyrins do not pass up into the ether phase under these conditions. A preliminary separation may thus easily be effected. A further difference exists between uroporphyrins I and III, in that the latter, as discovered by Waldenström, Fink, and Hoerburger (1935), may be removed from a carefully acidified solution by repeated extraction with ethyl acetate. Uroporphyrin III was thus obtained in pure form for the first time from the urine of acute idiopathic porphyrinurics. Fischer's (1926) method for the isolation of the coproporphyrins from urine, faeces, serum, etc., is based upon the acetic acid–ether solubility discovered by Saillet (1896); a similar technique has been used by Schumm. Briefly, the material is strongly acidified by acetic acid and then shaken with successive quantities of ether until all the porphyrin is extracted. The combined ether extracts are washed with water to remove most of the acetic acid, and the porphyrins recovered by shaking with dilute hydrochloric acid. According to the concentrations of acid used, a further separation may be achieved of the different ether-soluble porphyrins present, since, for example, coproporphyrin can be extracted completely by 0.5 per cent. HCl but protoporphyrin not until an acid concentration of 3 or 4 per cent. is used.

In the following description of the methods by which we isolated the individual porphyrins from the urine and faeces of our patient these methods find illustration.

Preliminary Tests upon the Urine

When viewed by a direct-vision spectroscope the red-brown urine voided by this patient exhibited two well-defined absorption bands at approximately 580 and 542 mμ. (Using the same instrument, the readings for oxyhaemoglobin were 577; 540 mμ.) The addition of a reducing agent caused no change, but upon acidification with a few drops of concentrated hydrochloric acid an immediate shift was seen to approximately 600 and 556 mμ. There was strong continuous absorption in the blue end of the spectrum and also in the far red region. The two-banded spectrum is closely similar to that of the zinc complex of uroporphyrin.

Isolation of Coproporphyrins and Chromatographic Separation applied to the Urine Residue

Two litres of urine (collected October 4 to 10) were acidified with 100 c.cm. of glacial acetic acid and shaken twice with 1-litre portions of ether. The ether phase was washed well with water and the porphyrin then removed by shaking into 1 per cent. hydrochloric acid. This solution showed absorption bands at 595 and 549 mμ. Spectrophotometric comparison with a standard coproporphyrin solution gave the yield as 0.306 mg. By addition of potassium acetate and shaking with ether the porphyrin was transferred back again to the organic solvent, which exhibited the neutral four-banded spectrum of coproporphyrin 625, 570, 532, 498. The solution was evaporated to dryness, esterified by methyl alcoholic hydrochloric acid, and the dry ester treated with anhydrous ether, in which coproporphyrin III ester is soluble but coproporphyrin I ester insoluble. All dissolved except a small unweighable quantity, which was, however, crystallized from hot chloroform-methyl alcohol and obtained in the form typical of coproporphyrin I methyl ester, melting-point 230° to 240° C. (Fig. 8). The ether solution was concentrated to low volume in a weighed tube and then stoppered and set aside in the ice-chest. The crystals which formed were washed sparingly with dry ether and then with petrol: weight, 0.3 mg.; melting-point, 172° to 174° C. (Fig. 8). The coproporphyrin fraction of the urine thus consists principally of coproporphyrin III (0.15 mg. per litre), together with a trace of coproporphyrin I.

The residual urine, after removal of the ether-soluble porphyrins, was allowed to filter slowly under gentle suction through a column of alumina (Merck's "nach Brockmann") in a vertical glass tube measuring 2 × 30 cm. The first filtrate was yellow, but a brownish-red pigment followed which showed no absorption bands in the red or green, but the broad band of urobilin in the blue region of the spectrum. When all the urine had passed through the column, the chromatogram was washed by percolation with 1 litre of 5 per cent. acetic acid, which extracted the last of the reddish-brown pigment. Glacial acetic acid now removed a small quantity of pigment, migrating as a narrow zone and emerging as a mahogany-red solution with two faint bands at 580–555 and 530. On standing in the ice-chest the liquid deposited the substance responsible for this spectrum, which proved to be uroporphyrin metal complex.

After washing out the acetic acid from the column with water, dilute ammonia (50 c.cm. of specific gravity 0.88 to 200 c.cm. of water) removed the porphyrins. First came a deeply coloured zone emerging as a dark red solution consisting mainly of the metal complex (two-band spectrum), and following this the main bulk of the material in a bright red solution in which the four bands of the alkaline spectrum of uroporphyrin were very sharply defined. Since any metal in complex combination with the porphyrin is eliminated by the strong acid used during the process of esterification, the above solution and the fraction consisting mainly of metal complex (which was put once more through the chromatographic process to remove some accompanying brown material) were combined and acidified by acid to *p*H 3.7. On standing, the porphyrin material was precipitated completely. It was centrifuged off, washed with acetate buffer solution of *p*H 3.7, and dried *in vacuo*, then esterified and the ester crystallized from hot chloroform-methyl alcohol. It separated in the form of very fine hair-like needles usually in aggregates (Fig. 8) and having a melting-point of 258° C., not depressed by admixture with uroporphyrin III methyl ester. The total yield was 42 mg., corresponding to 21 mg. per litre of urine. Uroporphyrin I could not be detected.

	Yields of Methyl Esters (mg. from 2,000 c.cm.)	Melting-points of Methyl Esters
Coproporphyrin I	minute trace	230° to 240° C.
Coproporphyrin III	0.3	172° to 174° C.
Uroporphyrin I	*nil*	—
Uroporphyrin III	42.0	258° C.

Identification of the Metal Present in Complex Combination

Using a calibrated reversion spectroscope the wave-lengths of the bands due to the metallo-porphyrin were 5,782; 5,406 A.U. (oxyhaemoglobin in the same instrument was 5,769; 5,389). Messrs. Adam Hilger, Ltd., kindly took spectrograms of the materials absorbed on a barium precipitate of the patient's urine and of a normal urine, and concluded that no doubt there was a greater concentration of zinc in the patient's sample.

The acid liquids from the esterification process, containing the metal which had been removed from its combination with the porphyrin, were evaporated to dryness, taken up in a little water, and filtered. Spot tests applied to this solution were positive for Zn, Fe, and Cu. It is thus possible that more than one porphyrin metal complex was present, although the observed absorption spectrum corresponded most nearly to that of uroporphyrin zinc complex, for which Mertens (1937) gives 571.5; 536 mμ. (For the coproporphyrin zinc complex Kapp (1939) gives 575; 539. Kapp and Coburn (1936), however, mention that higher dilutions gave 578; 541.) Zinc in complex combination with porphyrins has been observed by other workers, among whom may be mentioned Turner (1938) and Derrien and Cristol (1930). There is no doubt that the metal complex was present in the urine as voided, since a specimen obtained immediately after micturition still exhibited the characteristic two-banded spectrum. On the other hand the chromatographic results make it quite clear, also, that some of the uroporphyrin was not so combined. All the urine was collected in porcelain or glass, and never came into contact with metal.

Isolation and Identification of Porphyrins from the Stools

There was available 275 grammes of material (October 14 to 18) having a moisture content of 64.9 per cent. The mass was ground up with about 1 litre of acetone and, after standing for some time, this solvent was filtered off and replaced by a further 1 litre of acetone. The defatted residue was then ground with 100 c.cm. of glacial acetic acid, 1 litre of ether added, and the mixture shaken in a stoppered jar for one and a half hours. After decantation the extraction of the residue was repeated, using 50 c.cm. of acetic acid and 1 litre of ether. The combined ether extracts were filtered through a sintered glass filter-funnel into a large separating funnel and washed several times with water. Shaking with six 100-c.cm. portions of 5 per cent. HCl removed the porphyrins. Since there was some emulsification, the extract was cautiously warmed on a water bath and stirred until the ether had been removed. There remained a clear deep red liquid containing only a little suspended matter which could be easily filtered off. The porphyrin was returned to ether with the aid of potassium acetate, and the ether solution, after washing, extracted first with 0.5 per cent. (coproporphyrin fraction) and then with 5 per cent. hydrochloric acid (protoporphyrin fraction).

The 0.5 per cent. acid extract was freed from some urobilin, etc., by shaking with chloroform, and the quantity of porphyrin determined spectrophotometrically: yield 2 mg. The protoporphyrin fraction (5 per cent. acid), after a little further purification, gave a solution containing 2.4 mg. of porphyrin. The total yield thus corresponded to 4.56 mg. per 100 grammes of dried faeces, or 1.6 mg. per 100 grammes of undried stool, and approximately half was coproporphyrin.

By esterification and separation with anhydrous ether as described above it was shown that there was only a trace of material crystallizing like coproporphyrin III, the main fraction (1 mg. from 1.1 mg. of crude esters) being identified as coproporphyrin I with ester melting-point 245° to 247° C. Examination of the stool residue for uroporphyrin failed to reveal any trace of this pigment.

Recovery and Purification of Urinary Porphyrin from a Barium Chloride Precipitate

The chromatographic process can be relied upon, but demands much time and attention. Our results with barium chloride precipitation followed by certain innovations are considered, therefore, to be worthy of record, because pure uroporphyrin ester was readily obtained in good yield. To 7.3 litres of urine was added 2.2 litres of 12 per cent. barium chloride solution, and the fine precipitate collected upon a large Buchner funnel, washed by water and then by methyl alcohol. It was then suspended in methyl alcohol containing 2 per cent. by weight of sulphuric acid and the mixture refluxed on the water bath for some hours. After filtering off the deeply coloured liquid by suction, the residue was boiled with a fresh lot of this mixture, the process being repeated yet a third time. The three extracts were combined and placed in a large separating funnel with about 300 c.cm. of chloroform. Much water was then added and, after shaking, the chloroform layer was run off. Extraction with further smaller quantities of chloroform removed all the porphyrin ester from the acid aqueous layer. This crude chloroform solution was brownish red in colour and quite clearly contained much pigment in addition to porphyrin ester. To it was added twice the volume of petroleum ether, and the mixture was shaken repeatedly with 1 per cent. hydrochloric acid until no further brown material was either extracted or precipitated at the interface. This amorphous brown impurity was filtered off, and the remaining chloroform solution shaken repeatedly with 10 per cent. hydrochloric acid, which removed the porphyrin quantitatively, affording a clear deep red solution (1.25 litres). It was allowed to stand overnight at room temperature for complete hydrolysis to take place. 100 c.cm. of 50 per cent. sodium hydroxide was added and enough saturated potassium acetate solution (150 c.cm.) to bring the *p*H to about 3.7, when there was an immediate precipitation of the free porphyrin. This was centrifuged off, washed by acetate buffer solution of *p*H 3.7, then with water, and dried *in vacuo*. Re-esterification and crystallization from hot chloroform-methyl alcohol gave 64.5 mg. of well-crystallized uroporphyrin III methyl ester, melting sharply at 260° C.—that is, approximately 9 mg. per litre of urine.

Discussion

Acute idiopathic porphyrinuria is clearly recognized in Germany and elsewhere on the Continent; it is being increasingly reported in America, but even to-day it is scarcely mentioned in British literature. Yet some of the early cases were published in this country, under such titles as "Haematoporphyrinuria not due to Sulphonal"—

for example, Calvert and Garrod (1901), Garrod (1904), Brown and Williams (1909). Possibly the negative form of title was partly responsible for lack of interest; or perhaps the fact that it was noted that not all cases of porphyrinuria were accompanied by grave symptoms led to the conclusion that the porphyrinuria was incidental and of little importance clinically; then again, sulphonal had just been recognized as a cause of porphyrinuria, and it was not always certain that the patient had not taken this or a similar drug; also, several patients were diagnosed as suffering from abdominal diseases and the porphyrinuria was regarded as secondary.

The modern attitude is that, if a patient has abdominal pain, constipation, and vomiting, with a brown or red urine containing porphyrin which can be detected without special methods of separation and concentration, the possibility of "acute idiopathic porphyrinuria" should be considered. A difficulty is that in certain patients the symptoms and porphyrinuria may not be striking at first —hence some authors would make a fourth group of "chronic porphyrinuria"—and there may be several mild attacks before one which is grave establishes the diagnosis. None the less, there can be no doubt of the existence of a separate clinical group of porphyrinurics of the acute idiopathic form. The diagnosis is important in practice because it prevents unnecessary operations: in our patient there was no clear-cut history of the urine being red at the time of the appendicectomy in 1937; but the laparotomy in 1938 was unnecessary, as now we all agree, although, as noted previously, he was temporarily better after it. The decision whether to operate or not will remain difficult in future cases, for no physician wishes to be responsible for stopping an operation which could have done good. In the presence of grave abdominal symptoms it is the significance attached to the porphyrinuria which settles the issue: we repeat that, if the urine is brown or red and contains porphyrins that can be detected without special methods of separation and concentration, the diagnosis of acute idiopathic porphyrinuria may be made. But the responsible physician may still hesitate, for he knows that the condition is rare, and justifiably may refuse to be guided largely by a laboratory report. He will be influenced much more if the tests for porphyrins are quantitative: in acute porphyrinuria several milligrammes are excreted in the twenty-four hours' urine, whereas in health 0 to 50 µg. (1 µg. or 1γ = 1/1000 mg.) and in the lesser grades (see below) of porphyrinuria only fractions of a milligramme are present.

It is interesting that there are important differences chemically as well as clinically between the three types of porphyrinuria. In the acute idiopathic form the urinary porphyrins belong mainly to series III, whereas in congenital porphyrinuria they are largely series I compounds.

	Copro I	Copro III	Uro I	Uro III
Health	Very slight trace	Very slight trace	Nil	Nil
Congenital porphyrinuria	+	Trace	+++	Trace
Drug porphyrinuria (sulphonal, etc.)	+	? Trace	+++	? Trace
Acute idiopathic	Very slight trace	+	Nil	+++
Lead poisoning	? Slight trace	+	Nil	Nil

Congenital porphyrinuria is distinctive in several respects; there are marked photosensitization and pigmentation of bones and teeth, neither of which is present in the other types (see under heading "Chief Signs").

Were it not that series I porphyrins apparently predominate in sulphonal porphyrinuria too (Fischer and Duesberg, 1932; Fischer and Libowitzky, 1936), it might have been suggested that the distinctive features of the congenital form were due to the series I isomers, which are known to be more active as photosensitizers. It is curious that in sulphonal porphyrinuria uroporphyrin I, whereas in the acute idiopathic form uroporphyrin III, predominates, according to Fischer and his collaborators, for otherwise the two groups have almost everything in common; indeed, they are often classified as subgroups of the same "toxic" group. In contradistinction to the congenital form, both show in the advanced stages similar abdominal and nervous symptoms.

One point emerges quite clearly, however, as indicated in our section on the chemistry of the porphyrins. It is inconceivable that the excreted series I porphyrins can be derived from the *breakdown* of haemoglobin or other series III compounds. It is possible that where series III isomers are excreted these may have had such an origin, although in modern literature the tendency is to assume that it is at some stage in the *building up* of haemoglobin, etc., that an error or toxic effect has occurred which causes an excessive excretion of these porphyrins also. Experiments by one of us at present in progress may help to throw light upon the origin of the series III porphyrins in various pathological conditions (cf. Rimington, 1938, b; 1939).

Summary

"Clinical porphyrinuria" is defined; it includes the congenital form, that due to drugs such as sulphonal, and the acute idiopathic type, of which a case is described because it is not well recognized in British literature.

A summary is given of the chemistry of the porphyrins, for upon that depend not only the simple tests used in clinical laboratories but also the special investigations being made at several centres in the hope of throwing light on the synthesis of haemoglobin and the metabolism of related pigments.

The urine may contain uroporphyrin or coproporphyrin or both, and two isomers of each (I and III) have to be considered; methods for the separation and identification of these are described; in our case of acute idiopathic porphyrinuria, uroporphyrin III accounted for about 99 per cent. of the total urinary porphyrins.

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CAUSES OF POST-PARTUM HAEMORRHAGE*

BY

FARQUHAR MURRAY, M.D., F.R.C.S., F.R.C.O.G.
Professor of Midwifery and Gynaecology, University of Durham College of Medicine

The causes of post-partum haemorrhage can be divided into two main groups. The first and larger consists of cases where an otherwise normal uterus has been treated unkindly by Nature or other agencies; the second includes cases in which there is some pathology or possibly a misplaced placental site.

Group I: The Normal Uterus

Many primiparae after a spontaneous delivery have cervical lacerations, a few of which extend above the level of the vaginal vault or have some degree of perineal laceration. It is a rarity for such cervical or perineal lacerations to give rise to alarming or dangerous bleeding. If, however, an incompletely dilated os is forcibly stretched by the premature application of forceps or an injection of pituitary extract, or by an accelerated breech delivery, the cervical lacerations are considerably increased, and indeed may assume the nature of a minor degree of rupture of the uterus. Too rapid stretching of the perineum by forceps or pituitary extract or by imperfect control of the head during a spontaneous delivery also results in severe trauma. It is surprising how seldom severe bleeding occurs even in these cases, although there may be considerable shock.

The most important bleeding point is the placental site. Prolonged or obstructed labours exhaust the uterine muscle and predispose to an imperfect third stage as regards the mechanism and control of bleeding. Mismanagement of an otherwise perfectly normal third stage is a prolific cause of difficulty and bleeding at this time. The uterus if well treated performs its work satisfactorily. At the Tarnier Clinic in Paris I noted that the women were delivered on their backs, and the resident doctor left them alone after delivery during the third stage. He returned from time to time to palpate the uterus. This procedure struck me as somewhat casual, and as different from what is the general rule in this country, where the patient is usually delivered on her left side and may remain in this position for some time before she is turned on her back to await the separation of the placenta, and where massage of the uterus is often performed.

A study of some hundreds of cases of incomplete B.B.A.s on the hospital district, where the baby had been born but the placenta had not come away by the time the nurse arrived, showed that in only one instance was a slight post-partum haemorrhage reported. These women had no skilled attention before the arrival of the nurse or district doctor.

A series of cases injected with 1 c.cm. of pituitary extract immediately after the delivery of the baby, with a view to studying the effect on the third stage and the amount of blood loss, revealed that the only cases in which there was any trouble were those which had been allowed to remain unduly long on their side after the injection was given or in which the uterus had been massaged. It is well known that a uterus which is kept out of the pelvis either at laparotomy or by means of a full bladder tends to bleed. If a patient lies for long on her side before the placenta comes away the uterus tends to fall up into the abdomen, with disturbance of its neuro-muscular mechanism.

With the rarest possible exceptions I deliver patients in the lithotomy and cross-bed position aided by a Clover's crutch. Unless there has been a long labour and much anaesthetic has been used I do not allow anyone to touch the uterus, but proceed to repair any laceration or episiotomy wound which may be present and merely lightly palpate the fundus from time to time to determine if the placenta has separated. The third stage is uniformly most satisfactory, and there is a minimum of blood loss. The time factor is a most important one, especially at night. The time of delivery should be noted, and at least ten to fifteen minutes allowed to elapse—unless there is bleeding—before deciding whether the placenta is ready for expulsion or not.

Occasionally one meets with post-partum haemorrhage of an insidious nature if the placental separation is not going according to plan. This is most likely to be found if the patient is nervous or has had a long and tiring labour or a lot of anaesthetic. The placenta in these cases has left the fundus but has not yet been completely detached from the lower part of its site. The physical signs are misleading. An attempt at expression fails to deliver the placenta, but a mass of blood clot the size of a small orange is squeezed out. There is no active continuous bleeding, but merely expulsion of a mass of blood clot each time an attempt is made to express the placenta. Each clot represents several ounces of blood and the patient slowly deteriorates. It is a sound rule to remove these placentae manually while the patient's condition is good.

I have never seen sepsis arise where a manual removal of the placenta followed by an intra-uterine antiseptic douche was done while the patient was in fairly good condition. Delay in doing this owing to a dread of causing sepsis or because the blood loss is intermittent and slight, and not continuous and severe, is responsible for many bad results.

Group II: The Pathological Uterus

In the other group of cases there is some intrinsic mischief in the uterus. One such, a multipara, was referred to me as her two previous confinements had been followed by a most profuse haemorrhage after the third stage was complete. I made a point of personally attending her in the maternity ward. After the labour and the third stage, which were perfectly normal, she suddenly started to bleed profusely from the placental site, which was checked only by prolonged bimanual compression and the injection of pituitary extract.

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* Contribution to a discussion in the Section of Obstetrics and Gynaecology at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

The explanation of such a case is extremely difficult, as the course of labour, and also the third stage, on each occasion appeared normal. This in my opinion would rule out disease and also deficient retraction. There was no suggestion of placenta praevia. I think it may be explained by an experience I had when curetting a patient who had been bleeding for many weeks following a miscarriage at the fourth month. The curetting was done with a sharp curette as there were no retained fragments. Following the curetting she bled so profusely and so persistently in spite of treatment that a vaginal hysterectomy was performed. Section of the uterus showed a large vessel the size of the normal uterine artery passing through the musculature to the placental site.

I suggest that some of those rare and unaccountable haemorrhages from an apparently normal and empty uterus may be due to the presence of some unusually large arterial trunks in close proximity to the placental site. Occasionally cases which have been treated for ante-partum haemorrhage of the accidental type have a serious post-partum haemorrhage. Fortunately, the more serious cases of this condition, especially where the bleeding is concealed, are operated on, and this enables the operator to estimate the extent of the damage to the musculature, and whether or not it is safe to conserve the uterus without risking a severe and fatal post-partum haemorrhage. Many of these cases, however, are dealt with by domestic measures and have a spontaneous delivery or one aided by forceps, and there is no way of assessing the condition of the uterus. In one such case where there had been some concealed haemorrhage the third stage concluded with a most profuse and continuous haemorrhage. It was quite impossible to perform bimanual compression, as the empty uterus lay relaxed and flaccid in the abdomen and no mass of muscle substance could be squeezed. She died before a laparotomy could be performed. All cases of accidental haemorrhage, especially of the concealed type, should, if possible, be dealt with in a nursing home or hospital.

In cases of placenta praevia there is always the risk of a severe post-partum haemorrhage, but fortunately it is a rarity. I have met only one such case which failed to respond to any of the usual routine procedures, including bimanual compression. In this connexion it must be borne in mind that the rapid extraction of a breech baby in such a case may very readily cause a tear of the cervix and lower uterine segment and result in profound and even fatal haemorrhage.

Conclusion

As regards the problem of post-partum haemorrhage in general, with the exception of the rarer conditions, if the uterus is handled properly it will very rarely give rise to anxiety on account of bleeding, and with the rarest possible exceptions an empty uterus will not bleed except from a cervical laceration. I am against packing a uterus. The rule is to empty the uterus if the bleeding is to be stopped. The pathological uterus which is deficient in contractile and retractile power is less likely to respond if it is distended. I never repair cervical lacerations, and would perform bimanual compression followed by a hot douche in preference to packing if faced with serious bleeding from such a lesion. My experience of cases sent into hospital with the vagina reported to have been packed before admission would in itself make me opposed to advocating deeper tamponage.

I consider that many of the cases at present treated by blood transfusions would do equally well if they were given gum- or glucose-saline.

OPHTHALMIC INJURIES FROM MUSTARD GAS (D.E.S.)

BY

JOHN FOSTER, M.B., F.R.C.S.

Ophthalmic Surgeon to the General Infirmary at Leeds

Recent letters in the *Journal* are evidence of the interest taken in ophthalmic lesions due to mustard gas. I felt, in the circumstances, that certain information on this subject collected by me in the last few years might be acceptable to others. The table below is compiled mainly from figures in the *Medical History of the Great War*, already quoted in part by Sorsby. Thuillier (1939), while giving the total number of British mustard gas casualties as not fewer than 150,000, states that the total number of eye casualties is unknown. In the *Official History of the War: Medical Services* (1923), however, it is stated that "the great majority of D.E.S. casualties had eye burns." Yet out of this large number only ten had persistent impairment of vision after the war—this number rising from recurrent corneal trouble to thirty-four in 1937.

Reagent Mustard	Grading	%	Onset	Physical Signs	Symptoms	Treatment	Incapacity
Vapour <1/10,000,000	Mild	75	2–48 hrs.	Conjunctival congestion	Irritation and photophobia	2% $NaHCO_3$; paroleine; paper shade	1–4 weeks
Stronger vapour 1/20,000	Intermediate	15	2–48 hrs.	Ditto + chemosis	Ditto more severe	Ditto + 1% ung. atrop.	4–6 weeks
Concentrated vapour and liquid	Severe	10	May be almost immediate	Ditto + blistered lids and white band across cornea	Ditto	Ditto + treatment for infected ulcers and symblepharon	8–16 weeks

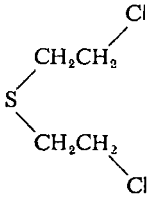
The burn is divided into three stages by Bonnefon (1939): the period of impregnation, the established burn, and the period of decrescence. It is the period of impregnation which is most interesting therapeutically, as once the burn is established there appear to be very few curative possibilities other than the treatment tabulated above. The difficulties in countering D.E.S. in the period of impregnation are as follows:

1. *Liposolubility.*—The gas is even more readily absorbed by the cornea than by the skin, and Sorsby (1939) has stated that if "drops" of liquid D.E.S. are placed experimentally on both corneae of a rabbit, and one eye is irrigated, the lesions are identical in both next day.

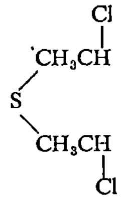
2. D.E.S. is relatively insoluble in water.

3. Except for its peculiar and specific intracellular reaction it is not an active substance chemically. Dichlormethyl sulphide and $\alpha\alpha$-dichlorethyl sulphide are equally liposoluble,

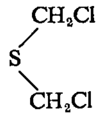
very similar in constitution, and just as easily broken up into hydrochloric acid under conditions resembling the intracellular, but are non-vesicant.



D.E.S.



αα-Dichlorethyl sulphide



Dichlormethyl sulphide

4. The eye will only tolerate in low concentrations reagents active enough to attack D.E.S.

As we may have an opportunity in the near future to try the effect of different remedies on the human subject, for those who may become dissatisfied with the accepted treatment I have included in the second half of this paper some notes on the chemical possibilities.

For the Established Burn

I find that Hederer and Istin (1935) have suggested the following applications, which I have not seen quoted elsewhere. These may be helpful in unsatisfactory cases which have not responded to the regular treatment. I have no other evidence as to their efficacy, however, than their quotation in the volume mentioned, and their recommendation by René Onfray in a personal communication in 1936. (1) For photophobia: 2 per cent. pilocarpine drops. (2) For pain and chemosis, ophthalmic ointment Z-1:

	Grammes
Orthoforme (benzocain)	5
Ichthosulphol	2
Sodium ichthosulphol	1
Thigenol	1
Sodium bicarbonate	1.5
Borax	1
Sodium sulphate	0.25
Magnesium sulphate	0.25
Excipient	ad 100

The benzocain does not produce corneal desquamation.

For the period of decrescence after the main infection has subsided they have suggested the use of ophthalmic ointment Z-2:

	Grammes	
Medicinal scarlet red, insoluble	2	
Methylene-blue, purified	0.5	
Bismuth subgallate	1.5	
Liquid paraffin, neutral	20	q.s., ad 100 gm.
White vaselin, neutral	20	
Anhydrous lanolin	60	

Period of Impregnation: Antidotes

MECHANICAL REMOVAL

Oil, grease, and soapy solutions which remove the liquid from the skin have been shown to reduce the effects up to ten minutes after exposure, while, again, oily substances on the skin have a definite temporary prophylactic effect, clearly demonstrated experimentally (Sollman, 1919). I know of no experiments in which oily substances are used as a prophylactic in the eyes, and the skin experiments are not directly applicable, as the grease was removed after a time. The prophylactic effect may merely represent the partition coefficient of mustard gas between grease and human skin. While the vesicant effect of the tears in the earliest stages, custom, and the incidence of secondary infection suggest that ocular irrigation reduces the severity of the burn, the efficacy initially, owing to the rapidity of absorption of D.E.S., is open to doubt.

ADDITION COMPOUNDS OF D.E.S.

These are formed by *p*-toluene-sodium-sulphochloramide and toluene-sulphodichloramide (monochloramine-T and dichloramine-T). The end-product isolated by Mann and Pope (1922), ββ-dichlorodiethyl-sulphide-para-toluene-sulphonylimine, is in spite of its imposing name relatively inert. Dichloramine-T also breaks up lewisite into harmless oxidation products. Monochloramine-T has a solubility of 1 in 7 in water, and has been used as an antiseptic on mucous membranes in a 0.25 to 2 per cent. solution. It has also been employed as a 1.5 per cent. ointment and as a 1 in 500 aqueous solution for bi-daily irrigation in cases of trachoma.

Dichloramine-T.—A 0.5 per cent. solution in chlorcosane (chlorinated medicinal paraffin) has been used in trachoma. This solution is stable for three days only and should not be employed if there is a precipitate. Warthin *et al.* (1918) claim that it has a definite prophylactic and therapeutic effect on rabbits' eyes when exposed to D.E.S. and that its effect on human eyes burnt by D.E.S. is beneficial. I can, however, find very little information elsewhere about its use.

OXIDATION OF D.E.S.

Oxidation of D.E.S. produces the less irritant tetrachlorodiethyl sulphoxide and the non-irritant sulphone. The eye, however, will not tolerate concentrations of reagents which leave the skin unaffected. Among possible applications are:

(*a*) 1 in 10,000 potassium permanganate.

(*b*) Diluted eusol solution as used by St. Margaret's on cases of ophthalmia neonatorum, and which I have employed on hypopyon ulcers for some time: it is equivalent to a 1 in 10 strength ordinary eusol solution. The prescription of ophthalmic eusol (J. D. M. Cardell, personal communication, 1936) is as follows. Two ounces of boric crystals and 2 oz. of chlorinated lime are dissolved in half a gallon of water. The solution is allowed to stand for twenty-four hours. It is then filtered and diluted with an equal quantity of water. This is kept as a stock solution. For use in the eyes nine parts of water are added to one part of stock solution, a further filtration being sometimes necessary. Unfortunately, I found only recently, the composition of the final aqueous solution is: hypochlorous acid, 0.027 per cent.; calcium borate, 0.128 per cent.; calcium chloride, 0.017 per cent. Some might object to the application of a solution containing calcium to a lesion in which punctate keratitis develops and extends after the first ten minutes.

(*c*) *Milton.*—This is a proprietary preparation of sodium hypochlorite, 1.01 per cent.; sodium chloride, 16.8 per cent.; with traces of sodium sulphate, sodium chlorate, sodium carbonate, and calcium chloride. It also is open to the objection that it contains calcium. According to the directions supplied with the bottle ten drops are to be placed in half a glass of cold water, as stronger solutions irritate the eye. If an eight-ounce tumbler is assumed, then this is a dilution of 1 in 152.

The free chlorine available in the latter two solutions and in Daufresne's solution is: eusol, 0.4 per cent.; Milton, 0.47 per cent.; Daufresne's solution, 0.45 per cent. This would suggest that it would be possible to utilize a much stronger solution of Milton than advised on the bottle if one were anxious to introduce more free chlorine, and that Daufresne's solution (liq. sod. chlorinat. $\bar{c}$ sod. bicarb.) can be used in a slightly greater dilution than eusol, and with the advantage that it would be less likely to contain calcium. All these solutions contain hypochlorites and are unstable to a varying extent.

HYDROLYSIS OF D.E.S.

Although sodium bicarbonate solution was probably suggested originally as an eye-wash in the hope of producing hydrolysis, and irrigation by saturated boric acid followed by sodium bicarbonate ointment (Kinttof, 1939) is still the German first-aid treatment, it is doubtful if hydrolysis of mustard gas in the conjunctival sac plays much part in reducing the severity of the lesion, for the following reasons:

(*a*) At 10° C. mustard gas has a solubility of only 0.07 per cent. in water. At body temperature 25 per cent. of the mustard gas in such a solution is hydrolysed in three minutes, but this reaction is not accelerated by alkalis (Peters and Walker, 1923).

(*b*) The tears, except in the earliest stages of the burn, have no vesicant effect on the conjunctiva of rabbits (Warthin). (Bonnefon dissents from this, stating that tears are vesicant for two to five days.)

(*c*) If mustard gas is applied to skin covered by a paste of sodium bicarbonate and water the resultant burn is worse than if it is applied directly to the skin (Warthin).

Consideration of these facts suggests that if sodium bicarbonate solution has any effect on eye burns it is simply by virtue of the irrigant effect of the aqueous vehicle. Saturated boric acid acts in the same way, but has the disadvantage that it dissolves slowly and that solutions must be prepared in quantity in advance.

Hypertonic Withdrawal

Bonnefon has advocated the use of hypertonic solutions on the grounds that a freer flow of lymph is produced in the already oedematous conjunctiva, and that D.E.S. is withdrawn through the conjunctiva by the osmotic effect of the solution—as shown by the fact that the fluid in the eye-bath used for application becomes caustic after a few minutes. The solution suggested is 800 grammes of saturated sodium sulphate + 200 grammes of saturated sugar syrup. It is extremely difficult to accept this scientifically, as he quotes no statistics of clinical results and the scientific basis for his claims is incorrect. He states that a porcelain-like burn of the cornea occurs only in the horse and the rabbit because they have no lacrimal glands. This porcelain-like burn is recorded in the *Medical History of the Great War* in the 10 per cent. of severe cases in human beings, and the horse and the rabbit have lacrimal glands—the lacrimal bones are notched for the duct (E. A. Spaul, personal communication).

Bonnefon also suggests, earlier in his paper that the tears remain caustic for a few days in any case. A hypertonic solution in the ordinary way would withdraw water only through the living semi-permeable membrane. It is possible, therefore, that his hypertonic solutions merely act in the same way as sodium bicarbonate—that is, as a mechanical irrigant. Nevertheless as he makes strong claims for the clinical results it would be interesting to analyse the washings of eyes burnt by D.E.S.—one group being irrigated with sodium bicarbonate and the other treated by hypertonic solutions. This might give us a clue as to the relative value of the two methods, since it is doubtful if the mere production of further oedema will do very much good. The induction of conjunctival oedema is, I think, disappearing as a treatment from the armoury of most ophthalmic surgeons these days.

Summary

The tolerance of the eye to certain reagents capable of neutralizing mustard gas under various conditions is discussed.

Animal research on the following lines is suggested: (1) The effect of the application of the reagents discussed above to eyes exposed to low concentrations of mustard gas. (2) The comparison of the washings of such eyes of the first few days for total chlorides, after treatment by (*a*) alkaline lavage; (*b*) hypertonic solutions, as suggested by Bonnefon.

The results thus obtained might indicate further clinical trial of some of these reagents in the event of gas warfare.

I am obliged for information from Professors Spaul and Challenger of Leeds University and Mr. B. Wood, senior dispenser of the General Infirmary at Leeds.

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A RAPID PRESUMPTIVE SEROLOGICAL TEST FOR WEIL'S DISEASE

BY

H. C. BROWN, C.I.E., M.B., D.T.M. & H.

(*From the Wellcome Bureau of Scientific Research, London*)

The macroscopic agglutination of bacterial suspensions in the presence of homologous sera on a slide, which is gently rocked to and fro about a longitudinal axis, has been known for more than thirty years as a rough-and-ready method for the determination of the nature of a bacterium. Garrow (1917) elaborated the procedure in the form of his clockwork agglutinometer. It is claimed that the readings are on the average within one dilution of that found by the full macroscopic method, but, as the Medical Research Council's Report No. 51 points out, this represents a possible 100 per cent. error, and concludes that the field of usefulness of this apparatus lies where rapid work is required under stress of circumstances. It is exactly under such stress that the test described below is intended for use.

In the first place brief reference must be made to the standard agglutination technique devised by Professor Schüffner. This consists in making varying dilutions of the patient's serum, to which are added equal volumes of a formolized suspension of leptospira: after incubation, droplets are examined microscopically by dark-field illumination with a 2/3-inch objective and a high eyepiece; no coverslip is used. I have personally for several years been in the habit of examining for agglutination after the mixture of leptospira and diluted serum has been allowed to interact overnight at room temperature; other observers incubate for varying periods at different temperatures.

From time to time a macroscopic technique has been advocated similar to that used when studying bacterial agglutination, the results being read either by the naked eye or with a hand lens. Pot (1936), in describing a macroscopic test for Weil's disease, advocated the use of an antigen grown in Korthof's medium and incubated at 52° C. for two hours, the results being read with a hand lens against a black background. In discussing this technique Brown and Broom (1939) gave it as their opinion that the test was not so sensitive as the microscopical test and that certain sera of low titres, such as those met with about the sixth day of the disease, might be overlooked when employing the macroscopic test. Brown and Broom also pointed out that human strains of *Leptospira icterohaemorrhagiae* isolated in England showed considerable differences in their agglutinability when using Schüffner's technique.

These observers also drew attention to the occasional occurrence of false positive reactions met with in the case of certain sera; these would cause difficulty in reading the macroscopic test. It is interesting to note that on the rare occasions upon which this false agglutination has been encountered a temporary false Wassermann reaction has also occurred. Even taking this and variations of agglutinability of different strains into account, the following rapid presumptive test would seem to be a useful diagnostic aid.

Technique of the Test

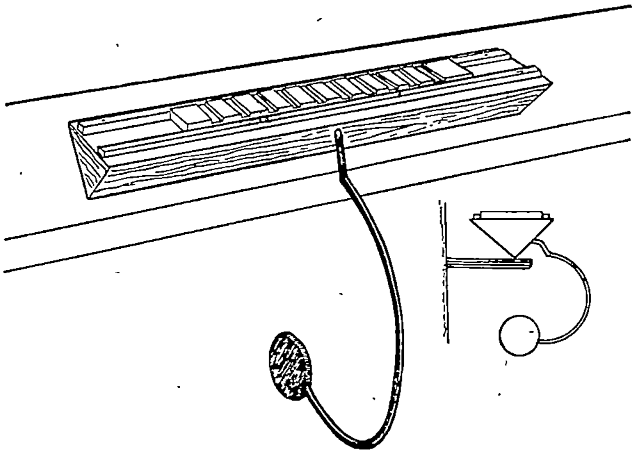
The test essentially consists in rocking to and fro on a slide for ten minutes small quantities of varying dilutions of the patient's serum in presence of a heavy suspension of *L. icterohaemorrhagiae*; this saline suspension is formolized to a concentration of 0.2 per cent. The preparation of a suitably concentrated antigen for this test is not a simple matter, as leptospira cannot be easily thrown down by means of a centrifuge from the fluid medium in which it is grown. Centrifuging a culture of leptospira in Fletcher's broth at 5,800 revolutions per minute for half an hour does not cause any obvious clearing of the supernatant fluid.

There are numerous references in the literature to spinning down leptospira from fluid media, but in my experience it is not a practical proposition unless some reagent is added which will facilitate the sedimentation of leptospira from the medium when it is centrifuged. This can conveniently be done by adding to the fluid medium saponin up to a total concentration of 1 in 1,000. The addition may be made after the culture has been formolized, which makes the procedure free from any risk of infection, although the strain, like the one employed, may have been subcultured at fortnightly intervals for five years and be no longer pathogenic.

Reference has already been made to the variation in agglutinability of various strains of leptospira which have been isolated from human cases during the last few years. Four human strains were compared as regards their agglutinability, both when put up in a water-bath for three hours at 56° C. and on the rocking slide. The same serum was used in each case. Both procedures gave exactly the same titres, but the titres varied according to the strain used. One strain was agglutinated up to 1 in 1,000, one only to 1 in 30, and the two other strains up to 1 in 100.

It is thus evident that the strain to be used as antigen in serological tests must be carefully chosen. The massed culture, about 500 c.cm., after the addition of formalin and saponin, is centrifuged at high speed and the deposit collected; this is suspended in saline until the opacity approximates that of a No. 1 Wellcome opacity tube used for the standardization of vaccines. The concentration required to get a suitable antigen from a well-grown culture for the rocking-slide method is approximately tenfold, so that 50 c.cm. of antigen can be obtained from half a litre of culture. This antigen is then centrifuged at approximately 3,000 revolutions per minute for ten minutes in order to get rid of any clumps of leptospira, and the supernatant fluid is bottled for future use.

The dilutions of the serum are made in the depressions of a painter's palette as in Schüffner's method. They are then mixed with an equal volume of antigen and placed on the slide shown in the diagram. This is made to rock for ten minutes, and the result is read by means of a hand lens against a dark background. Numerous sera have been tested by this method, and by the macroscopic method after incubation for three hours in a water-bath at 56° C. The results have been compared with those obtained with Schüffner's technique, incubation having taken place at room temperature for approximately eighteen hours.



Results

The results of the rocking-slide method and the macroscopic have been consistently identical, but in every instance Schüffner's technique has given a titre three times higher than that obtained by either of the other methods. In order to test the sensitivity of the rocking-slide method two rabbits were immunized with 2 c.cm. of a broth culture of leptospira administered intravenously. Four days later the sera of these animals were tested by all three methods. The macroscopic and rocking-slide gave a titre of 1 in 10, whereas Schüffner's method gave 1 in 30. On the seventh day the two former readings were 1 in 100 and Schüffner's method 1 in 300, and on the tenth day 1 in 1,000 and 1 in 3,000 respectively.

It is claimed that the rocking-slide method, given a suitable antigen, will produce a result within fifteen minutes of the receipt of the serum, and that it is reliable enough to justify the administration of curative serum.

I should like to thank my assistant, Mr. R. J. Reed, for his skill and care in maintaining the cultures of leptospira.

References

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Histology of Mongolism.—Ten cases are described in which histological examination of the brain revealed widespread proliferation of the fibrous glia, which in several cases was not accompanied by corresponding changes in the myelin and in the cells. The pathogenesis of these changes is discussed, and it is suggested that the findings are not likely to represent the pathological substrate underlying mongolism. They do throw light, however, on the interpretation of certain previous findings.—Histological Changes in the Brain in Mongolism. A. Meyer and T. B. Jones.—*J. ment. Sci.*, March, 1939, **85**, 206.

EFFECT OF HEAT AND COLD ON HAEMORRHAGE

BY

S. BRANDON STOKER, F.R.C.S.Ed.

Assistant Honorary Surgeon, Dewsbury Infirmary

At the present time, when ambulance classes are being held all over the country, one feels that some notice ought to be taken of the effect of heat and cold on the control of haemorrhage. Although a surgeon or an obstetrician will try to control bleeding into a cavity by washing it out with a hot solution, it does not appear to be generally understood why this is done, and it is set out in the St. John Ambulance handbook that bleeding ought to be controlled by the application of cold.

By a series of experiments, performed as a preliminary to other work on blood-coagulation time, it was shown that heat shortened bleeding time but cold greatly prolonged it. It is known that the coagulation time of blood is affected by changes of temperature, but the duration of bleeding time appears to be altered more by the effect of temperature on the tissues than on the blood itself. In the two experiments illustrated below the first specimens of blood coagulated in approximately the same time whether the tissues were hot or cold. It is on the subsequent specimens, flowing through the same punctures, that the effect of temperature is seen.

In these experiments the blood was obtained through a small stab puncture above the terminal joint of a finger, a slight congestion being first produced. The rate at which the blood flowed could be controlled by altering this congestion. A bowl of water was used to warm or cool the hands, but the temperature of this was never excessive. The principle of the coagulometer used was that of Cannon and Mendenhall. Into a standard glass tube containing the blood a wire dips every half-minute until a clot forms. This limits the excursion of the wire. The instrument works automatically once the specimen is in position, and it allows the clotting time of ten specimens to be measured at the same period. When blood flows through a wound the subsequent specimens obtained have a gradually shortening clotting time. This shortening is considerable when the tissues are warm, but much less so when they are cold. It seems that a blood-coagulating substance is formed in increasing quantity by the tissues after a wound is made and that heat accelerates its production. If the rate of flow of a single blood specimen is increased less of the coagulant will be mixed with it, and we see that it has a longer clotting time than the specimens taken before and after it. A decrease in the rate of flow shortens the clotting time. It is to be noted that the rate of flow of first specimens taken from wounds does not affect the clotting time. Similarly, when tissues are cold and less of the coagulant is being formed, specimens are little affected by the rate of flow. The effect of heat and cold on bleeding time corresponds to that on clotting time. In the subjects used for these experiments the bleeding time was always greatly prolonged by the application of cold.

As bleeding is controlled by plugging the damaged vessels with blood clot, the aim of treatment ought to be directed to this end. Heat is obviously the means to attain this rather than cold, which merely narrows the vessels without accelerating the plugging process. It is noticed by many men, when it is pointed out to them, that they bleed from a shaving cut much longer on a cold winter day than on a warm summer day.

Experiment 52

HAND COLD No. of Blood Specimen (*a*)	Clotting Time in Minutes	HAND WARM No. of Blood Specimen (*a*)	Clotting Time in Minutes
1	9½	1	8½
2	7½	2	5
3	5	3	5
4	4	4	1
5	3½	No further flow.	
6	4		
7	4½		
8	—		
9	4½		
10	4		
11	3½		
Blood continued flowing.			

Experiment 69

HAND COLD No. of Blood Specimen (*a*)	Clotting Time in Minutes	HAND WARM No. of Blood Specimen (*a*)	Clotting Time in Minutes
1	7½	1	7½
2	6½	2	6½
3	8½	3	4½
4	7	4	2½ slow (*b*)
5	6½	5	4 quick (*b*)
6	7	6	3½ quick (*b*)
7	5½ quick (*b*)	No further flow.	
8	4½ quick (*b*)		
9	4½ slow (*b*)		
10	5½ quick (*b*)		
Blood continued to flow.			

Notes.—(*a*) Specimens were taken at 1-minute intervals and through the same puncture. (*b*) Denotes that the rate of flow was made quick or slow by altering the capillary congestion.

Summary

It is shown that heat accelerates the production of a blood-coagulating substance in damaged tissues and cold retards it.

It is suggested that heat and not cold ought to be used to control haemorrhage.

Clinical Memoranda

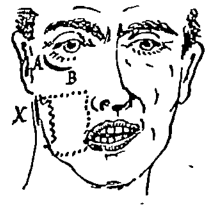
An Unusual Case of Facial Paralysis and a New Operation

Cases of facial paralysis due to various causes are fairly common, but such as I am about to describe I have never experienced before in civil or war practice. Before perusing the following description I would ask the reader to look into the nearest looking-glass, draw the right lower eyelid well down, push the tip of the nose over to the left, then screw up the facial muscles of the left side, and a very good idea of the case can be conceived. In May, 1939, the patient came into my hands, and the results obtained by my operation being considered satisfactory by all parties concerned I submit these brief notes.

Case.—A man aged 45 with right-sided facial paralysis; and the history was that forceps had been used at birth and in later life he had a motor accident. The lower right eyelid was everted, with epiphora and some discharge. The nose pointed to the left side, the right ala being collapsed. The mouth was drawn to the left side. When his face was not passive the patient grimaced hideously.

The Problem.—Obviously none of the classic operations such as nerve grafting or Gillies's temporal muscle transfer would be of any use even if the patient would have agreed to the time necessary for it. The everted lid and epiphora alone necessitated operative procedure. The nasal stenosis also caused distress; for the rest a cheery personality and congenial outdoor occupation led him to make light of his condition. After much thought I conceived the idea that if the facial tissues could be drawn across and firmly anchored the result should be satisfactory.

The Operation.—Excision two inches below pinna and behind angle of jaw; forceps entered at X and opened until the entire skin area represented by the dotted line on the diagrammatic sketch was separated from the tissues beneath, great care being taken not to injure any structures such as the duct. By keeping the finger within the buccal cavity Mr. Wilson safeguarded any penetration of the same. The whole skin tissues were then forcibly dragged over to X, a large semicircular portion of tissue was excised (see wavy line), and under considerable tension the parts were brought together at X and secured between two parallel knitting needles. The eyelid condition was much improved by a common plastic practice—incision at AB and stitching in the opposite direction. The patient can now breathe through his right nostril. A further considerable improvement is due to the fact that the right angle of the mouth is now normal at rest and in action, in contradistinction to the very ugly effect due to the fact that in the course of years the orbicular muscle had contracted so much that the angle had disappeared and the orifice resembled a pear with stalk pointing to the left.



In due course I hope to be able to present to the Library of the British Medical Association enlarged photographs of the patient before and after operation. I have to thank Mr. H. C. Wilson, F.R.C.S., for entrusting me with the case, and for his valuable assistance during the operation.

J. L. Aymard, M.R.C.S., L.R.C.P.,
Formerly Plastic Surgeon, Queen's Hospital for Facial Injuries, Sidcup, and the Cambridge Hospital, Aldershot.

Two Cases of Grease-gun Finger

These two cases, which have been termed "grease-gun finger," are the result of an unusual industrial accident. The condition has been described by Smith (1939). In a number of garages and omnibus depots a high-pressure grease gun is used which delivers through a very small nozzle grease at a pressure of between 200 and 1,000 lb. per square inch. The grease is ejected by the pressing of a trigger attached to the gun. The accident usually occurs when the garage hand is wiping the nozzle of the grease gun, which comes into contact with a finger, generally the index finger of the other hand. The grease is forced through the pulp on the palmar aspect of the finger into the digit, and in a moment balloons the whole of it out and fills the tissues.

Interesting features are that the accident is entirely painless; the patient notices that the finger has suddenly become three or four times its normal size, and that there is a small puncture wound where the grease has entered. The patient usually says that the finger has gone numb. On examination the digit is dead white in colour and considerably swollen, the swelling extending down to the junction with the palm of the hand. It resembles superficially a very bad whitlow, but is quite cool and quite painless, and the patient can move the finger freely. It is usually impossible to express any grease out of the puncture wound, for it has been spread uniformly and diffused over the whole of the subcutaneous and other tissues of the finger.

From this point the history is a very chronic one. There is no discharge; the finger is treated as potentially septic, and by the third or fourth day the skin on the palmar aspect of the distal part has become black and gangrenous, but there is still very little indication of inflammatory change. About the tenth or twelfth day signs of sepsis are usually apparent, and it becomes necessary to incise and remove gangrenous skin. The course of the disease is apyrexial from beginning to end. Extension beyond the finger does not appear to occur. Suppuration is local, usually with profuse granulation tissue, and ultimately there is a discharge of a flake of bone from the palmar aspect of the distal phalanx. The average duration of the condition from the time of the accident to the time of healing is six months. There is very little residual incapacity, and the patient retains free movements of the fingers.

Case I

A tecalemit operator aged 27 gave the history that on September 27, 1938, while working a high-pressure grease gun, he accidentally discharged the gun against the index finger of the left hand. He felt no pain, but noticed that the index finger became suddenly numb and swollen. He at once reported to the hospital, where all attempts to express any grease from the small puncture wound on the palmar aspect of the finger failed. He was put on expectant treatment, with rest, hot fomentations, and finally operative incision followed by baths. On February 20, 1939, a fair quantity of pus was discharging from the finger, and finally a small piece of sequestrum separated. On April 24 he was discharged as healed.

Case II

At 6 p.m. on May 5, 1939, a man aged 36, whilst operating a high-pressure grease gun, using yellow grease the consistency of petroleum jelly, accidentally pulled the trigger while the nozzle was against the first finger of the left hand. He said he did not realize anything had happened until the finger went numb, and he then saw it was dead white in colour, slightly swollen, and full of grease down to the middle joint. He came to hospital within half an hour of the accident. On examination the finger was slightly swollen and yellowish white in colour down to the proximal interphalangeal joint. A small puncture mark was visible on the palmar surface of the finger about a quarter of an inch from the distal end. There was no pain. An incision about half an inch long was made through the puncture mark. Very little grease appeared, even on firm pressure. A small strip of rubber glove was inserted as a drain and antiphlogistine applied. The antiphlogistine was repeated daily. There was a very slight discharge for twenty-four hours, then no more, as the grease seemed to have penetrated every tissue, rendering the finger avascular. After the fourth day the finger became indurated and black down to the terminal interphalangeal joint. About May 14 the finger suddenly doubled its size, the skin on the plantar and dorsal surface being separated from the underlying tissues by a watery fluid down to the mid-interphalangeal joint. On May 15 the raised skin was removed under nitrous oxide anaesthesia, and on the 16th radiant heat was given. Recovery occurred slowly.

R. Brooke, Ph.D., M.S., F.R.C.S.
Honorary Orthopaedic Surgeon, Royal Sussex County Hospital.
C. J. Rooke, M.B.,
House-surgeon, Hove General Hospital.

Reference

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Listeners on Christmas Eve will hear the first national wireless appeal on behalf of all voluntary hospitals throughout Great Britain and Northern Ireland. The B.B.C. has determined on this combined hospitals appeal in place of separate appeals on behalf of individual hospitals, and the detailed arrangements are being made by a special committee representing the British Hospitals Association and King Edward's Hospital Fund for London. Combined effort has already proved successful. In the past three years London hospitals have nearly doubled their street collections by doing away with the seventy-seven different flag days formerly held throughout the Metropolitan Police District which have been co-ordinated in one united effort.

Reviews

RECENT WORK IN BIOCHEMISTRY

Annual Review of Biochemistry. Vol. III. Editor, James Murray Luck; Associate Editor, James H. C. Smith. (Pp. 676; 1 figure. 27s. 6d., postage extra.) California: Stanford University; London: H. K. Lewis. 1939.

Once again the *Annual Review of Biochemistry* presents us with its comprehensive survey of the results of recent research in that science. The task of the editors tends to become no less formidable in that each year finds the prosecution of biochemical investigation continuing with ever-increasing vigour, but they and the reviewers, no matter what their difficulties, always manage to achieve their main objectives. In this eighth edition the quality of the work may be rightly gauged by reference to the names of some of the contributors—Linderström-Lang on proteolytic enzymes, Freudenberg on polysaccharides, Astbury on *x*-ray studies, Laqueur on hormones, Landsteiner on immunochemistry, to mention only a few. The literature under review, while it does not show that there have been many discoveries of a revolutionary nature, does clearly indicate marked and continuous progress. Much has been achieved in the way of extension and elaboration of highly important work, the basic features of which have already been fairly well established. Such is typically the case in the great strides made possible by the use of isotopes in labelling elements for metabolic studies. So wide has this application become that it enters into a number of different sections in this volume, but is most fully and interestingly presented in the chapter devoted to mineral metabolism. In particular, the fundamental principles governing the application of induced radio-active isotopes are here discussed, and followed up with an examination of the results so far achieved by this technique.

In the vitamin field, among the more important researches referred to are those concerned with the means of differentiating between vitamins A_1 and A_2, the further elucidation of the exact nature of the constituents of the B_2 complex, and the progressive steps culminating in the chemical synthesis of E. Certain clinical observations are included in the summary of the work on vitamin K, and afford ample evidence that there is distinctly more than mere academic interest in this anti-haemorrhagic factor. Due reference is also made to numerous chemical methods for the quantitative determination of vitamins, and their use in studies of human nutrition. The enormous volume of the current literature on the hormones presents unusual difficulty to those whose task it is to survey it adequately within reasonable space limits. In this book Laqueur and his collaborators succeed in presenting the gist of no fewer than 540 publications, and that in a readable form which is in no sense a mere cataloguing of papers. The most widely studied are seen to be the various anterior-pituitary, the sex, and the adrenocortical hormones. Of the first group, the diabetogenic and glycotrophic factors have come specially into the foreground in recent times, while the work on the nature of the urinary steroids is shown to have significant bearing upon each of the other two groups.

The proteins as a class have been subjected to intensive investigations from widely different points of view. Their chemistry and metabolism are each afforded separate chapters, while the *x*-ray studies that are reported penetrate deeply into the problems of their fundamental structure. Applied to fibrous proteins these *x*-ray investigations indicate that they all fall into two main groups—the keratin-myosin group and the collagen group. Myosin, the chief muscle protein, shows a quite remarkable similarity to the labile or "supercontracting" form of hair protein. Original distinctions between fibrous and globular proteins have now almost disappeared; thus it is that, to quote the reviewer, "we arrive at a conception of unity, a unity amongst all proteins. They are difficult in details, but not in principles."

The biochemically minded will study this volume from cover to cover; others who do not wish to delve into the more abstruse subject-matter, but merely desire to see where the science is making its most direct impress upon clinical medicine, will find it scarcely less valuable.

VARICOSE VEINS OF THE LOWER LIMB

Varicose Veins. By Alton Ochsner, B.A., M.D., D.Sc., F.A.C.S., and Howard Mahorner, B.A., M.D., M.S., F.A.C.S. (Pp. 147; 50 figures; 2 coloured plates. 12s. 6d. net.) London: Henry Kimpton. 1939.

This monograph on varicosities of the veins of the lower limb is, with some additions, a reprint of a paper by the two authors which appeared in *Annals of Surgery* last year. Varicose veins elsewhere than in the lower limb are not dealt with, and some indication of this might perhaps have been given in the title, since seekers for information concerning varicocele, haemorrhoids, oesophageal varices, or those found elsewhere in the body will be disappointed if the general title leads to the expectation that references to these conditions will be found in the book. Dedicated to Rudolph Matas, this volume on the leg veins, however, is a worthy addition to the important contributions to vascular surgery which have already come from the New Orleans School headed by Professor Matas. The treatment of varicose veins in the legs has passed from an almost purely surgical phase through a period of enthusiastic injection treatment to the present stage, when it is generally realized that most cases are best treated by a combination of surgery and injection. The internal saphenous vein forms the longest subcutaneous venous system in the body, and most cases of varicose veins involve the vein itself or its tributaries. The authors draw attention to Sir Benjamin Brodie's description in 1846 of a test to show incompetency in the valves of the great saphenous vein, and it was not until forty-five years later, in 1891, that Trendelenburg described the same test which is now usually known after him. It is pleasing to notice this test described by Ochsner and Mahorner as the Brodie-Trendelenburg test, and Professor Matas in an introduction describes this as a legitimate though tardy bit of historical justice.

A historical introduction is followed by considerations of the pathology, physiology, aetiology, and clinical aspects, and leads on to a description of the examination of the patient and the methods of treatment of the various veins themselves and of varicose ulcers when present. Where the Brodie-Trendelenburg test is positive Trendelenburg's operation should be performed. The importance of high ligation and transection of the saphenous vein, and, should the superficial external pudic, external superficial femoral, and superficial circumflex iliac veins empty into the saphenous above the site of the ligation, ligation of these tributaries also, is stressed. After transection the distal part of the saphena magna is injected with sclerosing solution. This is a highly successful form of treatment if attention is paid to details; in the past many relapses have been due to failure to pay such attention.

This monograph is a really excellent account of varicose veins in the lower limb and may be profitably consulted by all who are called upon to treat sufferers from the condition.

THE CRIMINAL AND HIS SETTING

The Criminal in Society. A Review of the Fundamentals of Criminology. By Henry T. F. Rhodes. (Pp. 280; illustrated. 7s. 6d. net.) London: Lindsay Drummond. 1939.

The contribution which Mr. Henry Rhodes has here made to the popular understanding of crime is to give a clear and condensed summary of the attitudes towards crime and the theories of its nature which have been held through the ages and more particularly in recent times. Until quite recently, as the notorious Calas case showed, the person accused of crime was accorded no rights at all, and even now men cling tenaciously to the idea that crime is a theological vice. Mr. Rhodes traces the advance to the psychological view of crime, which he regards as the most immediately important. He recognizes, however, that while we cannot escape from the study of the psychological situation which finally determines the criminal act, we cannot neglect the contributory factors of environment and social order. Society must take part of the responsibility for the crime; deficiencies are to be found in both the contributing factors. He therefore surveys the social background at various times, dealing with society itself as a problem, and gives particular attention to the economic factor, the neglect of which has been responsible for many fantastic opinions. He deals with criminal sociology, criminal responsibility, and the origin and significance of punishment, inferring that mere reform of penal methods can never be the final end of penology, which is deprived of all meaning and utility if no account is taken of the environmental factors. He closes the book with an acute analysis of crime in the authoritarian States, the democratic countries, and the socialist system of Soviet Russia, giving some account of the extraordinary progress reported to have been made in the U.S.S.R. by the application of constructive methods of reform. A student who requires a sound introduction to criminology could do no better than read this book, with its wealth of citation and reference and its moderate expression of opinion.

OCULAR APHASIA

Ocular Dominance in Relation to Developmental Aphasia. By M. Macmeeken, M.A., B.Ed. With appendix by Robert Sampson, F.R.C.S.Ed. (Pp. 60; 12 figures and 8 tables. 2s. net.) London: University of London Press, Ltd. 1939.

A quite remarkable piece of work has been done by Mr. M. Macmeeken, under the auspices of the Ross Foundation, for the study of prevention of blindness in Edinburgh. Children are brought to eye specialists in the hope that some defect of vision might be discovered that would account for the child's inability, total or partial, to learn to read. In some of these cases no such defect is found; the child is sent back to the difficulties of his educational outlook. There the matter is allowed to rest. Too often low mental capacity is adduced as the only alternative explanation, when in fact a high level of intelligence may be present. These cases, and others known as congenital word-blindness, were investigated by the Foundation.

In all 392 children were investigated—194 boys and 198 girls. They came from a good-class primary school of 900 pupils. The fathers were mostly engaged in industrial work. In examining the nature of the difficulties involved it was found that the recognized contributory causes to poor reading, such as absences from school, poor eyesight, and poor hearing, may and do produce bad reading capacity. But it was found that these were not sufficient to produce inability of such severe degree as to involve *disability*. The residual and serious disability is held to be due to aphasic characters. These children are "developmental aphasics" showing in varying degrees and as major aspects of the condition the two aphasic syndromes of word-recognition difficulty and the tendency to reverse letters or to distort letters or syllables within words. A significant relation was found between disability and left-eyedness as determined by sighting or directional tests of "eyedness." Every one of these "disability children" was found to be left-eyed.

This is a most interesting piece of research and well worthy of study. There is also an appendix giving the results of an investigation by Dr. Robert Sampson into the binocular vision of a series of children with reading disability.

A LITERARY TRIBUTE TO BART'S

Rose Window: A Tribute offered to St. Bartholomew's Hospital by Twenty-five Authors. With a foreword by the Lord Horder, G.C.V.O., M.D., F.R.C.P. (Pp. 386. 7s. 6d. net.) London and Toronto: William Heinemann. 1939.

St. Bartholomew's Hospital has good reason to be deeply grateful for a *Rose Window* constructed by twenty-five writers all of established position, who have been generous enough to give freely this work of theirs for its rebuilding fund. In this galaxy Marjorie Bowen paints a story of wistful charm in delicate colours, Ann Bridge draws a character study in forceful lines, J. B. Priestley tells us of some mad companions, G. B. Stern contributes a scene of skilful domestic diplomacy, while Noel Coward displays his contempt for theatreland, and Sir Hugh Walpole brings in a note of macabre horror according to his wont. In an age which produces more poets than real poetry Humbert Wolfe, Edmund Blunden, Walter de la Mare, Day Lewis, and others here prove that the authentic note has not faded into silence. Anna Zinkeisen has embellished the book with sprightly illustrations. With one exception every work is new and hitherto unpublished. The contributors have been so good as to make over all their royalties and in some cases the world copyright to the hospital—a gift obviously of great potential value. Clearly a most appropriate Christmas gift both for the recipient and for a famous hospital.

DIETARY STUDY OF AN AFRICAN TRIBE

Land, Labour and Diet in Northern Rhodesia: An Economic Study of the Bemba Tribe. By Audrey I. Richards, M.A., Ph.D. (Pp. 423; Illustrated. 30s. net.) London: Oxford University Press. 1939.

In former times any investigation into the diet of a primitive people would have been undertaken with a view to demonstrating how much better the feeding of savages in a state of nature was than that of a sophisticated European. To-day the study of the dietary of a primitive tribe or population has largely for its aim the practical improvement of that dietary in order to preserve the health and improve the nutrition of that people. Owing to the more intimate and ubiquitous contact of native tribes in Africa and elsewhere opportunities for inquiring into their habits of feeding and the production and quality of their food, as unaffected by such contact, are rapidly disappearing, and the importance of studying and recording facts in the field is now recognized by scientists and by Governments. Such a dietary study of the Bemba tribe has just been made by Dr. Audrey I. Richards, senior lecturer in social anthropology in the University of Witwatersrand, and published for the International Institute of African Languages and Cultures by the Oxford University Press. It is entitled *Land, Labour and Diet in Northern Rhodesia,* and it is an important book giving a careful and detailed account of the foodstuffs of the Bemba, the largest and most highly civilized tribe in Northern Rhodesia, the use the people put them to, their eating customs and prejudices, and their methods of growing, storing, and dividing food. It thus covers a wide field dealing not merely with dietary as such, but also with those economic, social, and magico-religious factors which arise in connexion with eating and drinking, and which, as the author remarks, "are social institutions in any country." The book is easy to read and is abundantly and appropriately illustrated. At the end are some useful maps and tables.

Notes on Books

Dr. F. M. B. Allen's useful *Handbook of Diseases of Infants and Children for Students and Practitioners* has been extensively revised for a second edition (London: Baillière, Tindall and Cox; 18s.). It is one of the best books of its size on paediatrics, essentially practical in outlook and clear in expression. The important advances of the last few years are faithfully incorporated, including the use of the sulphonamide compounds. Experience as physician in charge of infants at the Belfast Royal Maternity Hospital has enabled the author to revise the sections on the premature and newborn infant, which are now of great value.

In *Wild Foods of Britain* (A. and C. Black, 2s. 6d.) Mr. Jason Hill places the wild foods of this country into three categories: first there are a few delicacies which are well worth collecting however liberally stocked the garden and the larder may be; secondly, those which become worth special attention when supplies happen to be curtailed; thirdly there are many homely flavourings which have been unfairly ousted by the grocer's products. Here familiar names appear as unfamiliar foods—lady's smock for sandwiches, pig nuts such as Caliban dug with his finger-nails, sow thistle and shepherd's purse, tansy and sweet cicely, who in spite of her attractive name was the least appreciated by the Hill family. We are assured by the author that despite our mistrust there is only one lethal fungus in this country, appropriately named the death cap, which can always be recognized by its white gills. It is admitted that not many of the wild vegetable foods have a high nutritive value—if they had they would not be wild—but most are very rich in vitamins. Practically all the foods and recipes have been tried by the author and family, but it is regretfully stated that no method was discovered of making the fresh-water mussel edible; bargemen are reported to have eaten it, but their observations could not be recorded. Indeed, we gather that Milton was right, and that the services of a "neat-handed Phyllis" are essential to make a savoury dinner of these "herbs and other country messes"; otherwise L'Allegro's anticipations may be followed by sensations more appropriate to Il Penseroso.

In his work on *Medical Climatology* Dr. Clarence A. Mills, who is professor of experimental medicine in the University of Cincinnati, discusses, as the subtitle indicates, the effects of climatic and weather influences in health and disease. The subjects discussed include variations in fertility and sexual functions, world climates as they directly affect man, climate and disturbances of metabolism, infectious disease and body resistance, sclerosis and failure in the vascular system, mental function (suicide, homicide, mental instability and breakdown), dental caries, rheumatic fever and rheumatic heart disease, and tides in sickness and death rates. A bibliography of 119 references is appended. The work, which should form part of the library of every medical officer of health and epidemiologist, is published by Baillière, Tindall and Cox, price 25s.

Preparations and Appliances

CLOSED-CIRCUIT CO_2 ABSORPTION APPARATUS

Dr. H. Parry-Price, senior anaesthetist, Royal Berkshire Hospital, writes:

It seems that economy in gas and oxygen is going to be necessary during present hostilities. With this object in view I have devised a simple closed-circuit CO_2 absorption apparatus which will fit on to all machines such as McKesson, Boyle, and Walton.

As will be seen in the diagram, the gases pass through entrance A into a CO_2 filter. The basal oxygen supply comes in at inlet A at whatever pressure desired and from whatever gas-and-oxygen apparatus is being used. This entrance is guarded by a flap valve which prevents back-flow of gases during rebreathing. The collar A will jam on to the end of any apparatus—Boyle, McKesson, etc. The gases go out by pipe B, which has a McGill rebreathing bag on it, also a vinesthene drip-feed for deepening anaesthesia if required. They then pass by rubber tubing to the face-piece. At the face-piece there is an inlet guarded by a flap valve, C, and an exit guarded by flap valve D. There is an ordinary spring-guarded expiratory valve on top of the face-piece. Gases return along rubber tubing to the soda-lime tank and thus round the circuit again. The total cost of apparatus was just over £5. I have had it in use now for just over nine months with extraordinarily economical results.

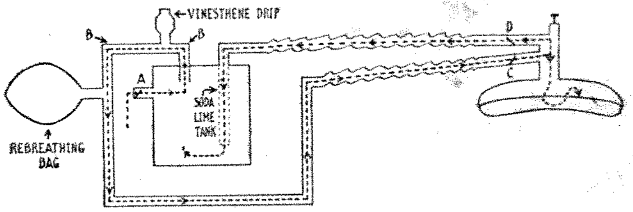

Fig. 1.—Diagrammatic drawing of closed-circuit CO_2 absorption apparatus.

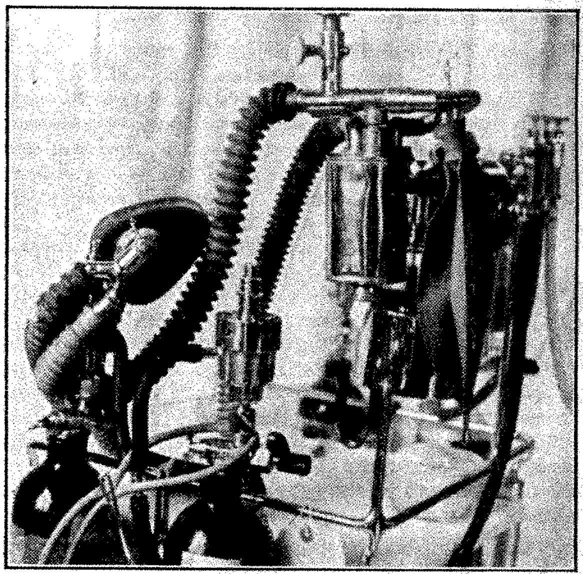

Fig. 2.—Apparatus attached to Boyle's machine, showing face-piece, inlet and outlet tubes, soda-lime tank, vinesthene drip-feed, and rebreathing bag.

Nova et Vetera

CAPTAIN COOK, HYGIENIST

The Life and Achievements of Captain James Cook, R.N., F.R.S., Explorer, Navigator, Surveyor and Physician. By Surgeon Rear-Admiral John Reid Muir, M.B., F.R.C.S.Ed. (Pp. 310; illustrated. 10s. 6d. net.) London and Glasgow: Blackie and Son. 1939.

At first sight another life of the great circumnavigator James Cook may seem redundant. Ever since his tragic death at Hawaii in 1779 accounts have been published of his adventures and discoveries, as well as several lives of the explorer. Most of the last were written by distinguished sailors or naval historians. The volume before us is also written by a sailor, a distinguished naval surgeon, and herein lies the interest and value of his new book about James Cook.

None of the previous authors, whether sailor or landsman, failed to dwell upon the important and original measures which Cook took to preserve the health of his crews. Before his time it was the ordinary thing, in a long voyage of a year or more, for at least half, but usually more, of the ship's company to die before the completion of the voyage from disease, chiefly scurvy, but also from typhus and other fevers. Cook brought about a remarkable change for the better. It is true that a few earlier sea captains had interested themselves in this matter, particularly Admiral Sir John Hawkins, in the reign of Queen Elizabeth. But apart from the very few, no commander appears to have bothered himself over this vital problem, but to have looked upon the decimation of his crew as something unavoidable and all in the natural course of maritime events.

Surgeon Rear-Admiral Muir in his most readable biography has laid special stress on this side of Cook's genius, and for that reason, no doubt, refers in his subtitle to his hero as Physician, as well as Explorer, Navigator, and Surveyor. Although James Cook is, and will always be, remembered as one of our greatest English sailors, he is almost the only one who did not achieve his greatness by bloodshed. He was an Empire-builder who added colonies to the Empire by means of persuasion and not by force. He was essentially a humane man, both to those who served under him and to the natives of the various islands which he discovered. Cook began life with none of the advantages one associates with those who eventually become distinguished men of science. The son of a farm labourer, he became a shop assistant, and then signed on as a deck-hand on board a Newcastle coal vessel, a hard school in which, as the author remarks, "if the conditions of existence were severe the experience was essential in the work of transforming the grocer's assistant into the famous explorer."

No doubt the bad health of sailors was in part due to the low standard of efficiency among the members of the medical profession who were employed at sea. Even if they were not ignorant or lazy, their social status was so inferior that their opinions, even if sound, were little likely to carry any weight with their commanding officers. Overcrowding was always a fruitful cause of the spread of disease, coupled with the complete lack of separate accommodation for the sick, which meant that infections and contagious diseases were bound to spread with appalling rapidity; and it was not until the early years of the nineteenth century that the elementary precaution of isolating the sick was approved and the modern sick bay established. The only serious efforts made to deal with scurvy before Cook's time were those of Dr. James Lind, physician to the Haslar Hospital, 1758–94, who discovered lemon-juice to be a specific, although by a tragic misnomer it came to be called lime-juice, a far inferior anti-scorbutic, and it is lime-juice which is still issued instead of lemon-juice in the Royal Navy.

This interesting book is illustrated by seventeen plates and has a useful chart.

Philip Gosse.

JOHN HALL—SHAKESPEARE'S SON-IN-LAW

Many things, but not all, come to him who waits. For just over 300 years very little was known about John Hall, who married Susanna, the elder daughter of William Shakespeare, on June 5, 1607. It was known that she took after her father and that her husband was a skilful doctor who practised at Stratford-on-Avon and died there in 1635. He was well educated, had a sound knowledge of French, and was in some way connected with Acton, then a village six or seven miles from London. He was a Master of Arts of some university, and of his family nothing was known. The results of the search made by the Master of Jesus College, Cambridge—Mr. Arthur Gray—given in a little volume of twenty-two pages,[1] are most satisfactory and valuable. It now appears that he matriculated from Queens' College, Cambridge, in Michaelmas term, 1589, at the same time as his brother, Dive Hall, both being described as "of Bedfordshire." John Hall graduated B.A. in 1593–4, and took his M.A. in 1597. The father of the two sons was William Hall of Acton, Middlesex, gent., who made a will dated December 12, 1607. Mr. Gray gives a transcript of the will, which is a mine of information about the family. William Hall appears as a deeply religious Protestant with a rather disunited family. He seems to have practised medicine at Acton, perhaps as an extra-licentiate of the College of Physicians, and with such success that he had an assistant—called in the language of the day his servant. His leaning, therefore, was rather towards surgery, for a physician had no need for the services of an assistant. This assistant—Matthew Morris—may have been the Matthew Morris of Stratford-on-Avon who was a party to the transference of Shakespeare's house in Blackfriars to the use of Susanna Hall in 1618. The Hall family owned land near Harrold in Bedfordshire, so that Dive and John are properly described at their matriculation as of Bedfordshire, but their actual birthplace still remains to be discovered.

D'A. P.

AN OLD QUEBEC HOSPITAL

The issue of the *Revue des Deux Mondes* for August 1 contains an interesting account by Professor Emile Sergent of Paris of the Hôtel-Dieu de Québec, which recently celebrated the tercentenary of its foundation by the Duchess of Aiguillon, the niece of Cardinal Richelieu and patroness of Corneille. The noble lady arranged for the dispatch of some Ursuline Sisters from the Convent of St. Augustine in Dieppe to the recently founded French Colony of Quebec, where they succeeded in founding not only the Hôtel-Dieu but several other hospitals. At the present time the Hôtel-Dieu, which forms one of the principal centres for clinical instruction in Quebec, has more than seven thousand admissions a year, exclusive of the thousands of patients who throng its out-patient departments and dispensaries.

The "Penzance" medical manuscript, believed to be the oldest medical treatise written in England and ascribed to about A.D. 1250, which was described in the *British Medical Journal* of July 8 (p. 80), was sold by auction for £235, a distinctly moderate price in the circumstances. So far as is known it has not been acquired by any public institution or library. The two rare tracts, found together, described in the issue of July 29 (p. 242) were sold for £82.

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[1] *Shakespeare's Son-in-Law, John Hall.* By Arthur Gray, M.A. Cambridge: W. Heffer and Sons. (2s. 6d.)

BRITISH MEDICAL JOURNAL
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A NATION IN GOOD HEALTH

Interesting and important as are the facts and figures presented in the Annual Report of the Chief Medical Officer of the Ministry of Health (reviewed in our last issue) its appearance makes us speculate rather on the story he will have to tell next year and the years after that. Will the downward tendency of the mortality and morbidity curves be reversed as a result of the war? Will the state of the public health reflect in increased sickness the state of the public mind, its anxieties and other emotional disturbances? Will it have to be recorded that the economy axe has fallen on this or that service, this or that control?

It is usual and understandable, but often fallacious, to go to the war of 1914–18 for parallels. If that can fairly be done in the field of public health the outlook is almost wholly encouraging. So far from public health having been retarded during the last war it took several leaps forward. The civilian death rate for the decade that included the war years was the lowest up to that time. Infant mortality fell markedly during the war—a rate of 108 per thousand births in 1913 had become 89 by 1919, and continued to decline, almost consistently year by year, to the present figure of 53. In 1917 the rate of maternal mortality was lower than it had been during the previous six years. Tuberculosis notably declined during the war. In 1913 the new cases of tuberculosis had numbered 117,000, but they never reached the six-figure level again, and in the first year after the war they were down to 77,000. Nor did the war interrupt the fall in incidence and lessening of virulence of various common infections. On the other side, the great influenza epidemic at the end of the war must be remembered. But on balance it would almost seem that a state of war—apart from its hideous toll of young male life—may have a hygienic value for a community. Or is it largely an illusion, and may the relatively low sickness level be explained by the fact that during war people do not so readily "give way" and in some respects live more hygienically?

On the other hand, the conditions of civil life were very different in the last war from what they are in the present. Twenty-five years ago war was not totalitarian. The possibility of occasional air raids on cities was a disagreeable anticipation (some people found it exhilarating) rather than a morbid obsession. Lights were dimmed, but there was no nightly "black-out" to endanger the traveller and lower the vitality of the whole community. Certain food shortages there were—people ate margarine instead of butter, saccharine instead of sugar, inferior bacon instead of butcher's meat—but these were not really felt until the war was more than half over. People as a whole were more busy, fewer had lost their jobs or failed to find others—and work which has to be done is a great prophylactic in times of public stress. Until the rise in prices, workers in civil life were for the most part better off than before; and income tax, slowly mounting from a small figure, never approached the catastrophic rate of 7s. 6d. in the £. There was no vast dislocation of hospital machinery and personnel with a partial paralysis of civilian medicine; and, above all, there was no large evacuation from cities. It is possible that organized civilian dispersal, which is only a precaution and not an act of war, may have effects more persistent for good or evil, or for both in different ways, than any direct action of the enemy, just as air raid precautions may number more casualties than air raids when damage to health and purse is reckoned in with damage to life and limb.

We must wait and see. For many of these effects we, or those who come after us, must wait for a very long time. It will be an interesting task for Sir Arthur MacNalty—we hope he will continue in office as long—to assess and chronicle the long-term reactions of a community like ours to a state of war. Meanwhile, the story he unfolds down to the very eve of war is so good that one feels anew the pity of it that the services should be interrupted or disorganized and that perhaps some territories where disease had been conquered should be retaken by that real enemy of mankind. Even the birth rate went up in 1938 to a figure which it had not reached for five years previously, and the death rate was lower than it had been for the last seven. The killing diseases mostly showed a lower incidence and a lower death rate. The one notable exception was cancer, which caused 1,665 deaths per million living in England and Wales. One interesting point is that while the crude rates imply that the mortality from cancer for each sex is increasing, the standardized rates—that is, with the differences solely due to the changed constitution of the population in regard to age and sex eliminated—show that the male death rate has steadily increased up to the present time, but the female rate since 1924 has been almost stationary with an irregular tendency to fall.

In his introduction to the report Sir Arthur MacNalty makes some philosophical reflections on progress. He points out that material progress, as exemplified by new inventions and economic prosperity, has always increased the difficulties of public health reform. To the superficial observer the industrial revolution of the early nineteenth century represented progress, with the

North of England studded with factories and national wealth increasing by leaps and bounds, but from the aspect of health it was not progress at all, and the clock of social welfare was put back. Progress is always two-edged. To-day the central nervous system is " dragged at the chariot wheels of modern progress." It is made to work, not necessarily more efficiently, but at a more rapid pace, and exposed to shocks and vicissitudes such as were never known in an earlier age. The penalty is nervous fatigue and breakdown. The mental health of the nation is of equal importance to its physical health. This Maginot Line is threatened, but we trust it will not be broken, by what is described as a " war of nerves." In any event it is reassuring to feel on the evidence of statistics, which here is indisputable, that this nation enters the war in much better health than it entered the last.

THE CONTROL OF PASTEURIZATION

The introduction by Kay and Graham in 1933 of the phosphatase test for controlling the efficiency of pasteurization constituted one of the most important steps of recent years towards the public health goal of providing the community with a safe milk supply. Already it has performed inestimable service, both in this country and on the other side of the Atlantic, where it has been adapted to the less stringent conditions of pasteurization in force in the United States and Canada. The original test has been modified considerably, and the effect of various factors on the result has been studied in some detail. The Imperial Bureau of Dairy Science, which was recently established at Shinfield, near Reading, could hardly, therefore, have chosen a better subject for its first technical communication[1] than the phosphatase test. The new monograph will be of particular value to chemists and technical workers who are called upon to use the test day by day. To the public health worker, however, it may prove a little disappointing by reason of its failure to answer one fundamental question—namely, What is the experimental error of the Kay-Graham test under practical conditions? Without this knowledge the exact interpretation of the result is impossible.

Milk is essentially a biological fluid, very complex in constitution, and never constant from one moment to the next. Every test, therefore, on milk is accompanied by an experimental error the magnitude of which varies greatly with the particular constituent under estimation. With regard to the phosphatase test, it is stated that the phosphatase activity of raw milk may vary considerably, depending to some extent on the stage of lactation, and that it is more closely associated with the fat than with the aqueous portion of the milk. It tends to be raised in milk coming from cows with mastitis. Experience has revealed the existence of differences in the buffer and in the Folin reagents used in different laboratories. The result of the test may be affected in addition by the use of carbolic soap on the hands or the glassware, by contamination of pipettes or of the milk with saliva, by the presence of tobacco smoke, by the use of bottle caps and stoppers containing phenolic resins or impurities, by the growth in the milk of phenol-producing bacteria or of bacteria capable of hydrolysing the substrate disodium phenyl phosphate, by the type of apparatus used for measuring the colour developed, and by sunlight on the bench. The test, moreover, requires great care in its performance and the possession of some technical skill. These are not objections to the test itself, which is undoubtedly an excellent one, but they must lead to the occurrence of an experimental error varying in size with different milks, different workers, and different laboratories. Until its range is known how is it possible to be certain that any colour exceeding 2.3 Lovibond units denotes imperfect pasteurization or contamination with raw milk?

There is a good deal of evidence already accumulated in the counties to suggest that many pasteurized milks are being unjustly condemned because a slightly greater depth of colour than the standard is obtained. When it is realized that the relation between the concentration of enzyme and of phenol liberated rises very steeply in the lower range of enzyme content, and that a difference of 0.5 Lovibond unit corresponds to a quite minute amount of residual phosphatase, it is surely important to know how often a difference of this degree can occur as the result of experimental error in titration. When it is further realized that the destruction of phosphatase in holder pasteurization occurs according to a monomolecular reaction, and that therefore the amount remaining after exposure to heat for a given time depends on the initial concentration present, there seems still further justification for wanting to know the nature of the frequency distribution of the results obtained under practical conditions. Would it not be possible to arrange for a comparative test to be carried out on an adequate number of milks between different workers (*a*) in the same laboratory and (*b*) in different laboratories? The recent international comparative trials of the Widal reaction brought to light surprising and unexpected differences between different laboratories in the accuracy of serum titration, and it seems not improbable that a similar trial, limited to this country alone, might well reveal more than minimal differences in the results of the phosphatase test. At any rate it is worth trying, and whatever the result the practical interpretation of the test will be placed on a much firmer footing.

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[1] H. D. Kay, R. Aschaffenburg, and F. K. Neave (1939). " The Phosphatase Test for Control of Efficiency of Pasteurization." Imperial Bureau of Dairy Science, Shinfield, near Reading. Technical Communication No. 1. (2s.)

A BACTERICIDAL BACTERIAL EXTRACT

When so many workers are preoccupied with the study of chemotherapy by means of sulphonamide compounds it is interesting to find that substances which will kill bacteria are also being looked for in quite another direction. An effort demanding exceptional patience and optimism which has nevertheless had astonishing success is described in a series of papers by R. J. Dubos.[1] He started with the assumption that bacteria may exist, which are capable of attacking Gram-positive cocci or some of their constituents, and employed in searching for them a method which has, in fact, already yielded micro-organisms capable of breaking down pneumococcal polysaccharide. A mixed sample of soil with certain mineral additions was maintained under suitable conditions of humidity and temperature until its decomposition was considered almost complete, and then fed for two years with suspensions of staphylococci, streptococci, and pneumococci. Since these bacteria furnished the only pabulum, only those soil organisms which could attack them would continue to proliferate, and presumably their capacity for doing so would be accentuated by adaptation during so long a period. At the end of it a sporing aerobic Gram-positive bacillus was isolated in culture from the soil which formed a substance capable of lysing staphylococci. This substance was liberated by the disintegration of the bacilli in ageing cultures, and could be obtained in a comparatively pure state by acidification, which precipitated it, and re-solution in a neutral medium. Although earlier preparations so obtained contained a protein, further purification yielded a highly active extract which was protein-free. The properties of this substance are quite unexampled. It attacks not only staphylococci but all Gram-positive cocci which have so far been tested; on the other hand, it is entirely without action on Gram-negative bacteria. Pneumococci, which are most susceptible to its action, are killed in a short period by a concentration of 0.002 mg. per c.cm., and their growth is inhibited by the presence of less than one-hundredth of this amount. The lysis which results from its action is regarded as secondary, death having been caused by an action the nature of which is uncertain, although there is evidence of interference with the dehydrogenase system of the bacterial cell. Not only is this bactericidal action exerted *in vitro*, but the substance protects mice against large multiples of a minimum lethal dose of pneumococcus culture, even when its administration is postponed for several hours after infection. This is, of course, a much more remarkable property than any *in vitro* action, and at once stultifies any comparison with the action of violet dyes, to which there is some resemblance in the fact that only Gram-positive bacteria are attacked. It is not too much to say that these observations open a new field in the study of bacterial metabolism. It has long been known that some bacteria form substances more or less antagonistic to the growth of others—pyocyanin is the most familiar and best authenticated example—but the vigour, scope, and specificity of the effect demonstrated by Dubos are something entirely new. It may well be that susceptibility to the products of other bacteria is confined to a few pathogenic species, fastidious in their growth requirements; on the other hand, who knows what further strange phenomena may be brought to light by patience and a few pots of soil?

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[1] *J. exp. Med.*, 1939, 70, 1, 11, 249.

CONSERVATIVE TREATMENT OF THE ENLARGED TONSIL

The indications for tonsillectomy are fewer now than when the doctrine of focal sepsis was more widely held, and recognition that the enlarged tonsil is not necessarily an infected one has also encouraged a more conservative attitude. There is still uncertainty, however, about the local measures to be adopted in conservative treatment, and reports on the value of x-ray therapy have been particularly conflicting. In a recent review of the literature[1] thirteen authors are cited who claim satisfactory results from x-ray treatment, among them Hickey, who claims to have sterilized 80 per cent. of diphtheria carriers by x rays. The conclusions of a further group of seven authors are entirely unfavourable. They find that the tonsillar infection is not influenced by x-ray treatment, and that cicatrization of the tonsil causes pus to become locked up in the crypts, while atrophy of the soft palate and lesions of the salivary, thyroid, and even the pituitary glands have apparently been observed as later sequels. Such lesions are, of course, the result of defective or too enthusiastic x-ray technique, but the objection that shrinkage of the tonsil does not often lead to resolution of the inflammation would be generally upheld. Opinion would thus favour the middle course of the eleven authors who restrict x-ray treatment to simple hypertrophy of the tonsils and uncomplicated tonsillitis. Stojakowski and Radzyminski consider that tonsillectomy is indicated when there is pus formation in the tonsil and when there are systemic effects such as arthritis, toxic myocarditis, etc., x-ray therapy being tried in such cases only if the general condition of the patient renders a surgical operation inadvisable. They are on more debatable ground when they state that a favourable result in these cases is due to the slight destructive effect of the rays producing an intense reaction in which the neutrophils, reticulo-endothelial phagocytes, and lymph-germ centres are all stimulated, so inciting the body to "autotherapy." The chief indication for x-ray therapy is undoubtedly the simple hypertrophy of Waldeyer's ring in young children, where the signs are those of mechanical obstruction in the nasopharynx. Destruction of lymphocytes and thrombosis of small blood vessels result in rapid and marked decrease in size of the tonsils and adenoids comparable to the effects of x rays on the thymic hypertrophy of infants. The authors do not discuss technique or dosage, although it is variations in these just as much as the wrong selection of cases which have resulted in so many contradictory reports on the value of x rays. A dose of 25 to 50 r at weekly intervals for four to six weeks should seldom be exceeded, and such a course may be repeated several times at six-monthly intervals with complete safety.

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[1] *Rev. Laryng.*, 1939, 60, 369.

NOMENCLATURE OF SKIN DISEASE

The last International Congress of Dermatologists was held at Budapest in 1935 under the presidency of Professor Nekam, another is due at New York in 1940. Let us hope that the international storms with which we are now contending will clear away in time to permit it to assemble according to plan. As the principal object of the last congress Professor Nekam proposed a very definite task. It was nothing less than the standardization of the definitions and terminology employed by dermatologists all over the world. Although progress has been made in this direction by successive generations since Willan over a hundred years ago first put forward and defined the primary lesions of diseases of the skin, real uniformity is still unattained. Consequently with the help of no fewer than 568 collaborators of every nation and clime he has produced the *Corpus Iconum Morborum Cutaneorum* in three volumes[1] for the purpose of standardizing the nomenclature of dermatology. This work consists of three volumes, two of which consist of illustrations of all the manifestations of cutaneous disease known, while there is an initial introductory volume, the greater portion of which consists of descriptions of the plates; but there is also a most important section devoted to the terms employed and to classification. Professor Nekam postulates that all diseases should be defined in Latin in order to avoid ambiguity, and he provides translation of those Latin terms which, certainly not commonly used, may be employed in this work perhaps for the first time, into the four languages employed at international congresses —German, English, French, and Italian. The translation is undoubtedly necessary, for many of these words have been coined for this special purpose and will not be found in the Latin dictionary. It is possible to find fault with some of the English equivalents given. For example, the word "cladiosus" is translated as "branchy"; "branching" would certainly be better, and "short-stalky" might well be altered into "short-stalked." These mistakes are, however, unimportant. There is no doubt much to be said for the principle that the official nomenclature of all diseases should be in Latin terms and that all the Latin terms used should be listed and translated so that no ambiguity may be possible in their employment. Moreover, there is no department of medicine where it is so easy to get confusion as in dermatology, owing to the vast variety of conditions with which it deals. Professor Nekam has given to his specialty a most useful work of reference which, if properly used, will do much to avoid misunderstanding between dermatologists, especially among those who describe the rarer conditions. It will, however, do nothing to remove the popular reproach that dermatologists are inordinately fond of long names. Here is a good example: Histiocytoma xanthelasmaticum! The defence of course is that such names are really descriptive and, if trouble is taken to translate them, give a pretty clear idea of the nature of the disease or condition. On the other hand, if clarity be desirable, which it is, there is nothing to be said for the practice of calling a disease after the man (or woman) who first described it, even though the merit so acquired deserves to be remembered.

MUSCLE FLAPS IN VASCULAR SURGERY

Bleeding from a tumour bed in the brain or a wounded venous sinus may be arrested by applying a "postage stamp" consisting of a piece of muscle, usually part of the temporalis or one of the thigh muscles. It was Horsley[1] who in 1914 first drew attention to the rapid haemostatic effect of detached muscle fragments applied to cut surfaces, and he compared the thrombokinetic action of the muscle with an observation made by Wooldridge[2] in 1893 that the addition of tissue juices to blood accelerated its coagulation. T. de Martel of Paris in his neurosurgical work has employed pieces of pectoral muscle from recently killed pigeons in the belief that the muscle of birds is more effective than human muscle. A freely bleeding laceration in the liver has been effectively controlled by the insertion of a large piece of the rectus abdominis into its depths. Experimental work on pedicled muscle flaps wrapped around wounded arteries is reported by R. M. Isenberger and M. C. Carroll of Kansas City.[3] Incisions were made into either the femoral or carotid arteries of dogs, and it is stated that the procedure of using a still attached muscle flap is not difficult and results in immediate haemostasis, permanent healing, and the preservation of the normal patency of the vessel. Tissue juices exude from the raw muscle and within a few minutes precipitate fibrin along the plane of contact between the living muscle and the wall of the injured artery. Steady but gentle application by digital pressure is made between the freshly denuded muscle and the lacerated artery for from one to ten minutes, or the muscle flap is sutured in position around the artery, no sutures traversing the vessel itself. Subsequent examination of the wall of the vessel which remains patent shows that a layer of endothelial cells covers the muscle in relation to the rent in the artery. In any type of surgical repair of wounded blood vessels the most important consideration is perhaps the development of an occluding thrombosis, and Isenberger and Carroll's experiments suggest that thrombosis is more likely to follow the application of a detached than of a pedicled muscle flap which is still living. They conclude that living muscle tissue is well adapted mechanically as a plastic tampon for immediate haemostasis; thrombokinase is liberated from the raw muscle and sets in motion the train of clotting reactions by which fibrin is deposited on the opposing surfaces and so effectively seals them. They suggest that these pedicled muscle flaps may be employed apart from vascular surgery for the repair of a wounded common bile-duct or to reinforce a line of intestinal anastomosis. But these extensions of the work are of limited value in view of the fact that other and effective methods are available. In the field of vascular surgery, however, the pedicled muscle flap may have a future.

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[1] *Corpus Iconum Morborum Cutaneorum.* By L. Nekam, M.D., with the help of 568 collaborators. Parts I, II, and III. Leipzig: J. A. Barth.

[1] *British Medical Journal,* 1914, 2, 8.

[2] *On the Chemistry of the Blood and Other Scientific Papers.* London, 1893.

[3] *Surgery,* 1939, 6, 265.

ENDOCRINOLOGY IN THE BEEHIVE

It is now known that the mammalian pituitary gland contains and secretes a principle which stimulates the sex glands to both increased growth and enhanced activity. Apart from this gonadotrophic principle of the pituitary gland itself, several other hormones having similar properties are now recognized and are finding a useful place in practical therapeutics. Of these, one is present in considerable amount in the serum of mares at one stage of pregnancy; another, with somewhat different properties, is abundant in the urine of pregnant women; and a third is found in the urine of women after the menopause. These gonadotrophic principles are mammalian in origin, and it is of interest, therefore, that evidence has recently been obtained of a gonadotrophic hormone from a different source—the bee. It is well known among bee-keepers that all new-born bee larvae receive during the first two or three days of life a special food known as royal jelly. But only those larvae which are destined to become queens continue to receive this food throughout the whole of their larval life. On this diet the larva grows rapidly to maturity, attaining twice the size of the adult worker bee but in a shorter time, and develops large ovaries and mature sex organs capable of laying eggs for several years. The worker bee, on the other hand, deprived of the continued benefit of royal jelly and fed on nectar and pollen, emerges from the larval stage with infantile sex organs incapable of function. That this development of a queen is solely due to a royal jelly diet and not to any constitutional cause would seem to be well established by an experiment, first recorded in 1791 and since abundantly confirmed, in which worker larvae substituted for the normal inhabitants of queen cells received the royal jelly intended for their predecessors and emerged as a result as full-size queen bees.[1] It was concluded by apiculturists that the jelly itself must contain some principle stimulating development of the sex organs. Definite evidence that this is so has recently been obtained by Heyl.[2] Samples of royal jelly were extracted by the same methods which are known to provide active extracts of mammalian pituitaries. The extracts were tested by the usual methods for detecting and measuring gonadotrophic activity, being injected into immature rats, in which they produced a definite increase in ovary weight of 60 per cent. over controls, the enlarged ovaries showing microscopical evidence of strong follicular stimulation. Thus an extract derived from a secretion of the bee was shown to have gonad-stimulating properties similar to those of mammalian hormones. The royal jelly is produced in a special gland in the head of the bee, the supramaxillary gland, which opens in the region of the mouth and yields the jelly as an external secretion. Heyl rightly calls attention to the similarity in position of this gland to the Rathke pouch from which the mammalian pituitary develops.

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[1] *Bee-keeping*, 1937, 2, 1635.

[2] *Science*, 1939, 89, 540.

RESIDUAL INFECTIVITY OF THE PRIMARY COMPLEX OF TUBERCULOSIS

The persistence of living tubercle bacilli in the so-called healed primary tuberculous foci in the lung and hilar glands is of more than academic interest. Their presence is a constant menace to the body and may serve to explain the endogenous theory of the origin of pulmonary tuberculosis. In a review of the literature William H. Feldman and Archie H. Baggenstoss[1] conclude that there is no unanimity of opinion on the infectivity of chronic lesions of the primary complex of tuberculosis. They point out, however, that morphological evidence is not a trustworthy criterion unless the findings are supplemented by animal inoculation tests, and that even then there might be difficulty in correlating the pathological changes as viewed microscopically with the results of the virulence tests, since the same tissue cannot be used for both procedures. The authors' own investigation included examination of material from sixty-eight subjects, varying in age from 7 to 90 years (70 per cent. being in the fourth, fifth, and sixth decades of life), who had died from conditions other than tuberculosis. The tissues from the primary tuberculous lesions in these subjects were examined microscopically and, after emulsification, inoculated on to culture media and injected into guinea-pigs. In only one case were tubercle bacilli demonstrated by these methods, although microscopically the lesions (encapsulated and sclerotic, or caseous or caseo-calcareous) often showed evidence of activity. As the presence of silica in varying amounts was a fairly constant finding in the lesions, the authors suggest that in the absence of demonstrable viable tubercle bacilli in the lesions the histological signs of activity were possibly due to the silica. Their data suggest to them that in adults endogenous reinfection is unlikely to occur from lesions of the primary complex. It must be added here that such a conclusion, even if confirmed, does not invalidate the endogenous theory of pulmonary tuberculosis, as there is ample evidence that it often originates from the healed or latent pulmonary lesions developed during the stage of dissemination following the primary infection.

THE MEDICAL DIRECTORY, 1940

Messrs. J. and A. Churchill Ltd. have produced the ninety-sixth edition of their *Medical Directory* at the usual date and in the workmanlike manner to which we have so long been accustomed. Indeed there are some typographical improvements—as in the bolder printing of the names of streets in the Local List for London. There has been a net increase of 1,738 entries, but the number of pages of text has only increased by twelve. The numerical summary of the medical profession shows that there are now 62,847 names, compared with 61,109 for 1939. Increases will be found in all sections of the *Directory*: 636 under Provinces, 307 under Abroad, 245 under Scotland, 184 under London, 159 under Services, 152 under Ireland, and 55 under Wales. The price of the 1940 edition is unchanged at 42s.

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[1] *Amer. J. Path.*, 1938, 14, 473.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

INJURIES OF THE SEMILUNAR CARTILAGES—II

BY

A. G. TIMBRELL FISHER, M.C., F.R.C.S.

(*Concluded from p. 1151*)

Treatment of Recurrent Cases

Repair in cases of injury to the semilunar cartilages is very sluggish, and as blood vessels can only be traced in the region of the peripheral border it is probable that true repair is largely confined to minor peripheral fractures of the menisci. This is the probable explanation of the frequency with which the original injury is followed by recurrent symptoms. The latter are well known and need not be recapitulated in detail. At first the recurrent attacks are often associated with considerable reaction; but as a rule the attacks of locking, although possibly becoming more frequent, are associated with a diminishing degree of reaction and inconvenience. There is, however, a serious risk of the onset of arthritic changes, and the patient should always be warned of this danger.

Treatment of Recurrent Cases by Operation

Often operation is delayed for many years because of the slight inconvenience, and eventually the patient seeks advice owing to the fact that the recurrent attacks are associated with increased disability. The ideal time for operation has, needless to say, then passed, although such operation may be worth while. Early operation in recurrent cases should be strongly urged, and removal of the offending cartilage is the best insurance against the onset of arthritis. Provided arthritic changes have not supervened, the operation in skilled and experienced hands has become in modern times one of the most successful in the whole realm of surgery. Opinions differ as to how much of the damaged semilunar cartilage should be removed, and in any case this must depend upon the actual nature of the injury.* When there is any doubt, I believe that the wisest plan is to remove the whole cartilage by some such operation as my combined method (Figs. 5 and 6). This does not necessitate a large operative exposure, and permits actual inspection of the back part of the cartilage, instead of blind and unsurgical groping through an exposure anterior to the corresponding lateral ligament.

The anterior end of the semilunar cartilage is first exposed by means of a curved incision through skin and capsule anterior to the corresponding lateral ligament, and sometimes this exposure is sufficient. If exposure of the back part of the cartilage is considered necessary, all that is required is to prolong the anterior skin incision backwards and upwards, thus making a small flap with its convexity downwards. This flap is reflected upwards and the back part of the semilunar cartilage exposed by a second capsular incision posterior to the corresponding lateral ligament. It is sometimes argued that it is unnecessary to expose the back part of the cartilage because, if it is injured, it springs forward with traction upon the anterior portion of the semilunar and can be readily removed through the anterior incision. It is certainly true that this sometimes happens; but since adopting the above technique I have been impressed by the number of cases in which exposure of the posterior part of the semilunar cartilage has revealed a severe lesion which it has not been possible to remove through an antero-lateral incision.

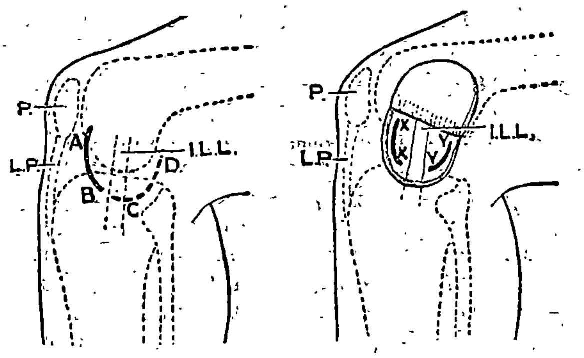

FIG. 5.—Diagram showing my method of exposure of the semilunar cartilage. P. = Patella. L.P. = Patellar ligament. I.L.L. = internal lateral ligament.

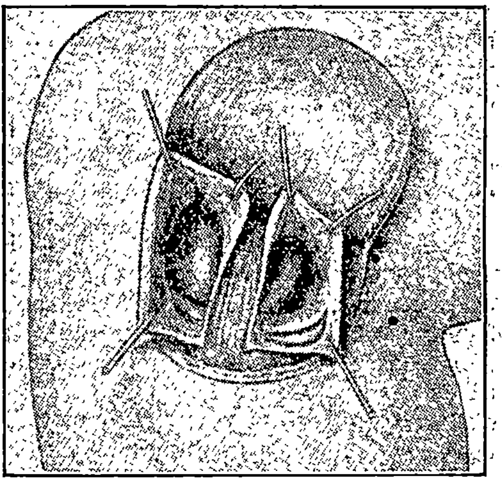

FIG. 6.—My method of exposure of the semilunar cartilage.

A word of caution is necessary against the practice of removing only the displaced handle of a bucket-handle lesion of the cartilage. In discussing the aetiology of this lesion it has been pointed out that the whole cartilage is detached, ground between the femoral and tibial condyles, and longitudinally split. The attachments of the peripheral portion must therefore have been severely damaged, and in my experience it frequently gives rise to subsequent trouble. There is no evidence that removal of the peripheral part of the bucket-handle lesion has any effect upon the stability of the joint.

It may be argued that such highly technical operative points do not concern the general practitioner. This is, however, not the case, for some of the blame for an unsuccessful operation is apt to fall upon his devoted head, and any suggested operation should be fully and freely discussed between specialist and practitioner.

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* This question is discussed in greater detail in my book *Internal Derangements of the Knee-joint.* 2nd edition. H. K. Lewis and Co., Ltd.

Operation in Complicated Cases

In some cases a lesion of a semilunar cartilage is associated with injury to the tibial spine, with the presence of one or more loose bodies, or with osteo-arthritic changes, and an extensive exposure of the whole of the anterior compartment of the knee-joint is desirable. In such cases my patella-displacing operation, in which the joint is opened by a long paramedian incision and the patella displaced towards the outer side of the joint, gives a complete exposure. I have never observed any interference with function that could be traced to this more extensive exposure.

Prognosis after Removal of Semilunar Cartilage

The prognosis, assuming a correct diagnosis and a satisfactory type of operation by an experienced surgeon, depends upon two principal factors: (*a*) the number and severity of the attacks; (*b*) the presence or absence of arthritic changes. With regard to the former, repeated attacks of locking or giving way of the joint followed by effusion lead in time to a certain amount of stretching of the joint ligaments and joint instability. In such cases operation may be of great benefit in curing the attacks of locking, but a certain amount of joint effusion after exercise, with a feeling of weakness and insecurity, may persist for awhile. This fact obviously constitutes an argument for early operation in recurrent cases. With respect to the second of these factors, although arthritis of the osteo-arthritic type is more apt to occur in neglected cases in middle life, it may occur in the knee-joint at a comparatively early age when operation is unduly delayed. In such, operation will probably cure the attacks of locking and may call a halt to the arthritic process, but it is obvious that it can have little effect upon the changes already present. This fact also shows the importance of early operation when recurrence of symptoms has become established.

If cases in which arthritis has supervened are excluded the results of operative removal in modern times by those with special experience are extremely satisfactory, and the progress that has taken place in recent years is shown by the following table:

	1911 Figures* per cent.	1932 Figures (my own), per cent.
No recurrence of attacks	82.02	100.00
Knee as good as the other	56.17	91.80
Movements perfect	86.51	98.36
No change in shape	76.40	83.60
Knee painless	48.31	81.96

* Power, D'Arcy (1911). *British Medical Journal*, **1**, 61.

My figures include a few cases in which both semilunar cartilages were removed from the affected knee; the results of such treatment are also good. One patient, a professional footballer, from whose left knee I removed the external semilunar cartilage in 1926 and the internal semilunar in 1927, is still playing a good game.

Treatment of Recurrent Cases by Mechanical Methods

It will probably be generally conceded that the various knee-trusses and other forms of apparatus sometimes worn in an attempt to prevent attacks of locking are, as a rule, inefficient and unreliable. The results of removal of the offending cartilage by operation in experienced hands are so satisfactory that the only conditions that justify the attempt to control recurrent attacks by apparatus are those cases in which operation is contraindicated on account of age or illness.

Manipulation in Recurrent Semilunar Cartilage Lesions

A well-known bone-setter used to claim that he could bring about "the radical cure of derangements of knee cartilages without operation." What is the truth about this matter concerning which controversy has raged for so many years? It is probable that many of these "cures" were of minor injuries of the menisci which had become tethered by adhesions, and manipulation in such cases is now known to be of proved value. It is clear from physiological reasons that actual cure by repair of the torn fragments in recurrent cases is probably impossible. The fractured surfaces become covered with smooth fibrous tissue, and even if apposition between the fragments could be obtained by manipulation it would be difficult to imagine conditions less favourable to repair. It must be conceded that in some recurrent cases associated with definite locking a temporary relief from symptoms has been obtained by manipulation. In my opinion such relief is due to the fact that either the fractured portion has been freed from adhesions tethering it in some abnormal situation, or the handle of a bucket-handle lesion has been firmly forced into the centre of the joint, where it has been temporarily out of harm's way and has become fixed by adhesions. Experience teaches, however, that the "cure" is rarely lasting, and when strenuous conditions must be faced such treatment by manipulation is usually a poor substitute for operative removal. It may be tried, however, when operation is refused or is inadvisable, and when there is no likelihood of subsequent strenuous use of the limb.

MINOR INJURIES IN CIVIL BOMBARDMENT

DR. TRUETA'S ADDRESS

The City Division of the British Medical Association called a meeting on December 5, which was open to all practitioners, to hear an address by Dr. J. Trueta of Barcelona on "Medical and Surgical Assistance of Minor Injuries in Bombarded Towns." The Great Hall of the Association House was entirely filled. The chairman, Dr. C. O. S. Brooke, said that in previous discourses before the Royal Society of Medicine, notably the one published in the *British Medical Journal* of December 2 (p. 1073), Dr. Trueta had dealt with the more serious injuries. His purpose on this occasion was to deal chiefly with minor injuries and their differentiation from the more serious.

Dr. Trueta began by pointing out one respect in which the treatment of casualties due to bombardment of towns had an advantage over the treatment of the injured in ordinary military operations. Surgeons could not operate in the front line of battle; casualties had to be evacuated to the rear, some of them perhaps a considerable distance behind the lines. In the case of bombarded towns, however, the injured could be treated on the same principles as those hurt in road accidents—that is to say, any operative procedure could be undertaken almost at once on removal to the nearest hospital.

Many injuries in every air raid were caused by small splinters from the explosion of light bombs. The distribution of such splinters was horizontal, so that a large number of wounds were received in the leg and lower abdomen. Often the deeper injury was far more extensive than the slight wound of the skin would lead one to suppose, and this was apt to mislead the surgeon.

After his own tragic experience in Barcelona, where he went through more than 340 bombardments, he was strongly of opinion that in all seriously wounded cases the immediate intervention of the surgeon was the only form of first aid desirable other than the possible application of a tourniquet to a limb which bled excessively. The application of splints or bandages or other forms of first aid had been shown to be generally not only useless but harmful in that it delayed surgical treatment.

First Aid for Casualties

Treatment could be administered in three places—in the ambulance, at the first-aid post, and in hospital. The only cases which needed immediate first-aid treatment as a result of aerial bombardment were wounds of the limbs with severe haemorrhage and fracture cases. All other casualties should be sent to the hospital direct without any first-aid treatment. With regard to wounds of limbs with severe haemorrhage, in every ambulance the attendant or nurse should be able to recognize those cases which needed the immediate application of a tourniquet. Haemorrhage, venous or arterial, or both, occurred in all extensive wounds, but only in certain cases was a tourniquet necessary or desirable. If there was a continuous and abundant flow of bright red blood—usually though not always in spurts—and a rapid and feeble pulse the tourniquet should be applied immediately. If, on the other hand, the flow was not great or if the blood was dark in colour a tourniquet should not be applied; such a haemorrhage could be controlled by direct pressure. Venous haemorrhage was sometimes increased by the application of a tourniquet. The tourniquet, if used at all, should not be left in position for more than the shortest possible time, never exceeding one hour for the lower extremity.

Fractures

The majority of fracture cases did not require the application of splints for transport to hospital. Sufficient immobilization was secured by placing the patient in a good position on the stretcher and supporting the injured limb by sandbags. Where there was extensive damage to the soft tissues and severe shock, however, splints might be applied, preferably the Thomas splint.

No stretcher case should be admitted to the aid post but should go straight to hospital. Walking cases could be divided into those suffering from actual wounds but able to walk to the post, and those not actually wounded but suffering from shock. Wounded cases needed immediate and careful examination of the whole area involved. Patients wounded in the thorax and abdomen and those with penetrating wounds of the limbs must go immediately to the hospital, as must the majority of cases of lacerating wounds or severely contused tissues. Only superficial wounds should be treated at the first-aid post, where the wound should be washed thoroughly with soap and water, followed by the application of a dressing of sterile absorbent gauze. Anti-tetanic serum should be given to all wounded cases. Tetanus was a common infection, at all events in Spain, and he had seen cases of tetanus produced after superficial wounds caused by glass.

Many of the victims who had no actual wounds but were suffering from the effects of explosion could be reassured after examination and sent home. For other cases in which there was gross excitement morphine was the best sedative. An injection of lobeline should be given to patients suffering from respiratory distress after "blast." When despite all treatment there remained a feeble pulse and severe depression the case should be sent to hospital as there was a possibility of internal haemorrhage. The true service of the aid post was to help and reassure nervous people, people suffering from psychological shock, and people who had sustained falls without actual penetrating wounds. All other cases should be sent immediately to hospital.

All hospitals serving an area liable to bombardment should have two types of operating theatres—one for major operations under general anaesthesia, and the other for minor operations. Closed fractures were the only cases in which it was absolutely necessary to take an *x*-ray picture before reduction and treatment. With the pressure of cases after a bombardment *x*-ray examination of every case was impracticable.

The Service of the General Practitioner

The younger surgeons having been called up into the army, all the hard work of civil defence in Barcelona fell upon the older men. In Catalonia no men over 40 were mobilized, and thus all the surgeons of considerable experience were able to deal with air-raid casualties until the final stages of the war, when general mobilization was ordered. Even so, the number of available surgeons proved small in relation to the need brought about by frequent heavy bombardments, and general practitioners were included in the surgical units. Each unit in the hospitals of Catalonia was made up of eight medical men, including four surgeons, with some general practitioners as assistants when the number of available surgeons was not sufficient. There was also one ophthalmic specialist and one ear, nose, and throat specialist in each unit. General practitioners assisted with the *x*-ray work and blood transfusions. Physicians were in charge of the clinical work in the hospital wards, for on many days it was not possible for the surgeons to leave the operating theatres. Dr. Trueta gave some graphic details of what it was like to work under such conditions: the sense of insecurity after repeated bombardment, and the effect which the sight of severely wounded people, among whom might be discovered one's own friends and relatives, had upon those engaged in the work. Only a sense of unavoidable duty made it possible to carry on efficiently in circumstances of such depression.

For general practitioners the bombardment of great cities also brought another kind of task. As a consequence of the evacuation of the child population and its concentration in distant places, together with the unavoidable improvisation of living arrangements, every possible measure had to be taken for the prevention of epidemics. In this respect he desired to pay homage to the medical profession of Barcelona, for, despite the bad food conditions at the beginning of the war, only two epidemics occurred, one of diphtheria and the other of typhoid, the latter among soldiers in two centres at the front. Both epidemics were controlled, the diphtheria by inoculation of serum and the typhoid by improved sanitation, better feeding, isolation, and other preventive measures. The organization of preventive measures was hindered during the first six months by revolutionary disorder and was made harder by the increase of the population of Catalonia owing to the arrival of evacuated persons from other parts of Spain. When it was remembered that blockade prevented medical supplies from reaching the population it was certainly remarkable that Catalonia should have had relative immunity from the epidemics which had always accompanied war. The foresight of the medical profession prevented the death roll of revolution, war, and aerial bombardment being augmented by deaths due to infectious disease.

Dealing finally with the location of hospitals, Dr. Trueta said that in the innumerable bombardments which Barcelona suffered the five great hospitals, including his own general hospital with 3,000 beds, suffered no damage whatever, but in the little towns in the country hospitals were quite frequently destroyed, and in one such hospital eighty-three were killed and over one hundred wounded. The reason why the Barcelona hospitals were untouched was the better defence of the city, protected as it was by barrages, fighting planes, and anti-aircraft guns, which made it necessary for attacking planes to fly at great altitudes and at extreme speeds. For this reason he thought it better that civilian casualty hospitals should be organized in the large cities. Moreover, evacuation to the hospitals in the smaller towns and villages was often very difficult, with roads and bridges destroyed and possibly an inadequate ambulance service.

Discussion

Mr. W. McAdam Eccles asked what Dr. Trueta would consider to be the proper percentage of casualty beds for a given population. He hoped the term "*first*-aid post" would be dropped. There were first-aid parties who had to send certain cases to aid posts. It was extremely difficult for such parties to discriminate as to the type of case that should go to an aid post and not to a hospital. But aid posts could act as buffers. Might not such posts in a city like London be of great service, not merely to the people who were unwounded though frightened and perhaps bruised, but also for certain fracture cases? Should not aid posts be so equipped as to be able to send to hospital by ambulance or even by stretcher those cases which had been found to be of such a nature as to necessitate operation immediately somebody in authority said that the case should go? There might be some delay, but as against that there would be a certain relief of overcrowding in the casualty hospitals.

Dr. Waller asked whether it would not be better to take a case of multiple wounds straight to hospital instead of to the aid post. Dr. G. de Swiet asked what was the lecturer's experience of black-out conditions in Spain. He believed that in a black-out many lives would be lost, simply because surgeons could not get to the victims in the darkness. Dr. Camps said that it had been suggested that practitioners who were relatively unskilled should not do anything to the injured people, but stand by, leaving the injured limbs exposed during perhaps a four- or five-mile journey to hospital, the aid posts being of no service except for superficial wounds. He wondered what the ambulance service in Barcelona was like. His own experience after riding in ambulances which were converted lorries was that, although he was uninjured to start with, he felt very much injured by the time the journey ended! What was likely to be the conditions of a victim on a five-mile journey?

Dr. Trueta replied that the number of available beds in Barcelona, a town normally of one and a half million inhabitants but with a population very much increased under war conditions, was little more than 10,000. The beds were not nearly sufficient after a heavy bombardment; but it was possible to send many patients out of the town to country hospitals. His plan had been to conduct the operation in the town hospital as quickly as possible, employing the closed method with plaster-of-Paris, which enabled the patient to be moved within three or four days to a hospital perhaps a hundred miles distant, far outside the area of attacking planes. The Barcelona organization would be more applicable to towns like Manchester or Liverpool, for London needed its own special service. He thought that immobilization in a stretcher, if the ambulance man knew the simple principles of putting the wounded in good position with sandbags, was quite appropriate for a journey to hospital which occupied generally only ten or fifteen minutes. As for the black-out, the conditions were rather different in Barcelona. The warning was received ten or fifteen minutes before the actual bombardment, and central control at the electricity stations enabled the town to be plunged immediately into darkness, and the current was turned on again after the raiders had passed. In reply to a further question, he added that gas was not employed in any of the raids on Barcelona.

On the motion of Dr. James Fettes, seconded by Dr. Boyd, a hearty vote of thanks was accorded to Dr. Trueta.

Ovarian Activity and Psychological Processes.—This is an important paper correlating hormonal activity, studied by means of vaginal-smears and basal body temperatures, with independent psycho-analytic study of the emotional state. This is apparently the first satisfactory attempt to make use of accurate methods of this kind to study the hormonal background of human instinctual activity.—Correlations between Ovarian Activity and Psychodynamic Processes: I, Ovulative Phase. T. Benedek and B. B. Rubenstein.—*Psychosomatic Med.*, April, 1939, **1**, 245.

NEUROSES IN WAR TIME

MEMORANDUM FOR THE MEDICAL PROFESSION

A conference first convened by the Minister of Pensions in July, 1939, to advise the Government as to general principles for dealing with cases of nervous breakdown which may become manifest in war time has now reported to the Minister. The members of the conference were as follows:

Lord Horder (Chairman), Sir Hubert Bond, Sir Farquhar Buzzard, Dr. Bernard Hart, Dr. Gordon Holmes, Dr. J. H. MacDonald, Professor Mapother, Dr. Crichton-Miller, Dr. T. A. Ross, Sir James Purves-Stewart, Dr. Aldren Turner, together with the Directors-General of Medical Services of the Navy, Army, Air Force, and the Ministry of Pensions.

Besides making other recommendations, the conference has suggested that the following notes be circulated to all members of the medical profession.

During the last war the occurrence of large numbers of neuroses engendered by fear, shock, exhaustion, physical and mental strain, or lack of sleep, and the rapidly increasing incidence of these from 1916 onwards, caught both the Services and the medical profession unprepared with any organization by which to deal with them or with any agreed method of treatment applicable to them. The result was an accumulation of a very great number of this type of "casualty" and a consequent lowering of the general morale.

These neuroses were popularly called "shell shock," a term which came into use in 1914, when it was believed that the great bulk of nervous disorders noted in the field of war had their origin in the physical effects of concussion by high explosives or of poisoning by gases. At that time this theory was widely prevalent, and was even promulgated by neuropsychiatrists of experience. It soon became obvious that this view could not be justified, since precisely similar disabilities, and in the same proportions, occurred not only among men who had not been subjected to any such exceptional exposure but also among those who had not been over-seas. Moreover, the nervous disorders arising during the war differed in no material way from those well known in civil life. Again, many men who were blown up or buried to the same extent were able to return to duty without admission to hospital and without apparently suffering any durable effects.

However, the term "shell shock" soon became a catchword among the troops, and was welcomed by the man suffering from nervous symptoms, as he did not realize, or could not admit to himself or to others, that he might be suffering from the effects of fright or terror. The catchword appealed to the public imagination as an excellent term by which to explain a condition which could not easily be understood, and was too often adopted by the medical profession itself as a diagnosis for any functional nervous disorder appearing in soldiers during the war. Such was the appeal of the words "shell shock" that this class of case excited more general interest, attention, and sympathy than almost any other—so much so that it is feared that it became a most desirable complaint from which to suffer.

Most of these neuroses occurred either in the form of an anxiety state or as hysteria.

Anxiety States

Anxiety states reveal a common characteristic—the constant presence of fear or anxiety accompanied by vasomotor and visceral concomitants to a greater or less extent. Some are cases of mild type in which the anxiety is simply a prolongation and exaggeration of the natural anxiety experienced by everyone when exposed to war conditions. The feeling of fear is the normal reaction to threatened danger when the impulses activated by the instinct of self-preservation are aroused, but these impulses have to be kept under control if an exhibition of cowardice is to be avoided. The source of this anxiety is very commonly the fear of being found afraid and the fear that control of these natural impulses, which are regarded as shameful, will not be forthcoming when the occasion arises. In some instances natural anxiety is aroused by the fears connected with loss of business and other financial and domestic worries caused by the dislocating effects of war. In cases of more severe type the condition is induced by morbid anxiety in which there is no apparent logical connexion between war experiences and the symptoms of anxiety. In such cases the anxiety is out of all proportion to the apparent exciting cause or it may appear to have no obvious cause at all, though rationalization on the sufferer's part may seem to account for it. In most of such cases it is experienced as a diffuse state of emotional tension undirected to any specific object or situation and causes a state of fearful expectation, the patients being described as "anxious" and "apprehensive." In a few predisposed cases the anxiety reaction is characterized by the development of phobias, or the anxiety may be transferred from its original object to some other situation which appears to the patient to afford reasonable grounds for apprehension, or to preoccupations of a hypochondriacal type. It may be accompanied at the outset by some degree of depression, or depression may be a secondary development after the anxiety has been concentrated on the symptoms themselves and a vicious circle has been set up.

Hysteria

Hysteria, more than any other form of mental reaction, provides the clearest example of the onset of neurosis due to failure of adaptation as the result of conflict between individual needs and social requirements. Suggestion is the most important factor as a cause for the symptoms. Physical manifestations of severe emotional disturbance such as mutism and tremors, or the effects of a minor physical injury producing some temporary loss of power in the limbs, are readily perpetuated as hysterical symptoms by means of suggestion in men who have been subjected to physical or mental stress. Suggestions by medical officers or other attendants, in the course of examination and treatment, may have serious results and are often responsible for the onset of such symptoms.

Underlying the process of suggestion is a conflict between the instinct of self-preservation on the one hand and ideas of duty and self-respect on the other. The development of the symptom satisfies the patient's ethical requirements, provides an escape from duty on the ground of physical incapacity, and at the same time gives effect to his individual needs by removing him from an intolerable situation. In a sense hysteria is thus an unwitting purposive or defence reaction, the patient being unaware of any such motivation. This unconscious motive is a factor of the first importance because not only is it responsible for the onset of the neurosis but it helps to perpetuate it until such time as the conflict is solved by other means. It is aggravated by popular misconceptions as to the nature of the neurosis, by public opinion, by the sympathy of friends and acquaintances, and if it achieves its aim—namely, invaliding from the battlefield or the Service —the bad influence exercised is shown by an increase in the incidence of these neuroses. Further, if it should lead to any economic gain treatment is extremely difficult or often useless.

In 1920 the Army Council appointed a committee to collate the expert knowledge derived by the Service medical authorities and medical profession from the experience of the war with a view to recording for future use the ascertained facts as to the origin, nature, and remedial treatment of "shell shock." This committee issued a report in 1922 (Report of the War Office Committee of Inquiry into Shell Shock, H.M. Stationery Office, 1922). The committee reported:

> (1) The term "shell shock" has been a gross and costly misnomer, and the term should be eliminated from our nomenclature. It is a catchword which reacts unfavourably on the patients and on others.
>
> (2) The war produced no new nervous disorders, and those which occurred had previously been recognized in civil medical practice. The cases divided themselves into three main classes:
>
> (a) Genuine concussion without visible wound as a result of shell explosions; this formed a relatively small proportion—5 to 10 per cent. of all the cases of shell shock.
>
> (b) Emotional shock, either acute in men with a neuropathic predisposition or developing slowly as a result of prolonged strain and terrifying experience, the final breakdown being sometimes brought about by some relatively trivial cause; these formed 80 per cent. of all cases.
>
> (c) Nervous and mental exhaustion, the result of prolonged strain and hardship.
>
> (3) Authorities are agreed that in the great majority of (chronic) cases of war neuroses there already existed a congenital or acquired predisposition to excessive and therefore pathological reaction in the individual concerned, and that this constitutional factor was of vast importance. It appears equally certain that the neuroses of war may manifest themselves even in those of sound nervous constitution provided stress be sufficiently severe and/or prolonged.
>
> (4) No case of psychoneurosis or of mental breakdown, even when attributed to shell explosion or the effects thereof, should be classified as a battle casualty any more than sickness or disease is so recorded.
>
> (5) The following factors are generally regarded as tending to increase the incidence and severity of mental and nervous disorders in time of war:
>
> (a) All those factors by which a soldier, or even a potential soldier, is encouraged to believe that the weakening or loss of mental control provides an honourable avenue of escape from military service at whatever period of his service.
>
> (b) The ignorance of the general community, both civil and military, together with a lack of interest evinced by the medical profession before the war, regarding the origin, nature, and significance of mental, and especially emotional, disorders.
>
> (c) All those preventable conditions which undermine a man's mental and physical health and lower the power of resistance—for example, bad sanitation, bad accommodation, abuse of alcohol and drugs, venereal disease, etc. In promoting and maintaining morale, good food, good housing, recreational relaxation, and attention to the comfort and well-being of the soldier are of the greatest service.
>
> (d) The introduction and perpetuation of the term "shell shock."
>
> (e) The employment of such terms as "N.Y.D.N.," "D.A.H.," or other designation which may become catchwords and thereby lead to an increase in the number of cases.

Diagnosis of Concussion and Emotional Shock

It is important that cases of concussion should be differentiated from cases of acute emotional shock not only because inappropriate treatment of the latter in the early stages retards recovery but also because incapacity certificates for physical injuries under the Personal Injuries (Emergency Provisions) Act apply to cases of concussion. The diagnosis of concussion should be made only when the history or clinical symptoms leave no reasonable doubt that the patient has suffered physical injury by the direct explosion of a shell, by being knocked over by it or by being buried under debris of a building or shelter. The concussed patient becomes immediately unconscious or is at least severely dazed or stunned. This loss of consciousness may last for a few minutes to several days. When the immediate effect passes off there is complete amnesia for a period immediately before and after the injury. The patient is consequently unable to say what happened to him and it is not possible to restore his memory by any therapeutic measures. Patients suffering from emotional shock also frequently state that they became unconscious after the incident to which they attribute their symptoms, but by careful questioning it is usually found that they can recall eventually most of their experiences.

Evidence of Physical Injury

Evidences of direct physical injury are often associated with concussion, such as rupture of the tympanic membranes, epistaxis, contusions, and, more rarely, signs of organic injury of the nervous system. The symptoms vary with the severity of the condition and with the interval between the injury and the day on which the patient is examined. The early symptoms seen as the patient is regaining consciousness can rarely be mistaken, but those of later periods are often misinterpreted. These are neither invariable nor constant, but the most characteristic are headache, pain and stiffness of the neck, vertigo, mental and physical inertia with drowsiness and heavy sleep, which is rarely disturbed by dreams or nightmare. The pupils may be irregular and their reaction to light may be sluggish. In the early stages the tendon-jerks are usually depressed, but later generally become brisk or exaggerated. There may be fine tremors of the limbs, but the coarse tremulousness of the limbs and head which is so common in the neuroses does not develop in concussion. The headache of concussion is usually better in the morning and early part of the day and increases from fatigue as the day advances. As distinct from the neuroses there is an absence of emotional instability.

Emotional Shock

Acute emotional shock may develop independently of any close exposure to the place of explosion. The fact of being subjected to bombardment or air raid or seeing horrifying sights may suffice to precipitate it. An avalanche of emotion seems to overwhelm the patient's consciousness, releasing primitive reactions. The clinical picture in the more severe cases may be one of terror, stark panic, and confusion or one of physical and mental collapse. In the former type the tendency is to hyperactivity—aimless running, incoordination, incoherence, screaming, and disorientation. In the latter type the reverse condition of stupor of greater or less degree may occur. In this state it is difficult to gain the patient's attention and it may be impossible to elicit information. The patient may sit or lie about in an apathetic state and may be shaken with violent tremors. In such cases there may be a cataleptic state for a considerable time. In milder cases of this type stupor is less profound, and the patients may carry out simple actions, but in a slow and hesitating way. They present a dazed or confused appearance, are easily startled, and take little notice of what is going on around them. The stupor may last from a few hours to several days and then pass off suddenly or gradually.

Treatment

The immediate treatment of patients exhibiting nervous symptoms due to fear, anxiety, and other mental factors during and after air raids is extremely important, as if they are neglected the morale of the population suffers seriously. *Such terms as "shell shock," which may suggest that these nervous symptoms have a physical basis or are due directly to injury, must be rigidly avoided.* The following is an extract from the Emergency Medical Service Memorandum issued by the Ministry of Health dealing with the treatment of neuroses:

> "The first essential in the handling of these patients when they arrive at an aid post is to convince them that their symptoms indicate no serious injury and that they will soon disappear. This necessitates reassurance and the re-establishment of self-confidence combined with such methods as may lead to even temporary disappearance or abatement of the symptoms. This requires a firm and authoritative but sympathetic attitude on the part of the medical officers and their assistants. In patients who are simply frightened and in emotional cases reassurance combined with an appeal to personal and patriotic pride and a large dose of bromide will usually be sufficient. The patients should then be sent to their homes.
>
> "When confusion, excitement, loss of memory, and disorientation are the chief symptoms, rest, warmth, hot drinks with plenty of sugar or a dose of bromide (gr. 20–30) or phenobarbitone (gr. 1) will be necessary. When patients are restless or excited a hypodermic injection of morphine (gr. ¼) or preferably an intramuscular injection of sodium phenobarbitone (gr. 1½) combined with hyoscine hydrobromide (gr. 1/100) may be required. The latter is provided in tablets which are easily soluble.
>
> "It may not be possible to retain these patients for long in aid posts and smaller medical establishments, but every effort should be made to return them to their homes if they improve sufficiently to do so with safety.
>
> "When hysterical symptoms predominate an attempt should be made at once to influence or remove them by suggestion—for instance, by showing the patient that a powerless limb is not paralysed or anaesthetic, or by making a speechless patient phonate by coughing and then utter a single sound as 'Ah.' Hysterical tremor can be usually arrested by making the patient relax his muscles.
>
> "It is of fundamental importance for medical officers to understand that as the incidence of neurosis is determined by psychological factors, the severity and duration of the disorder and its extension to other individuals depend in many cases on the treatment which it receives at the onset. If patients in whom such a step is not absolutely necessary are transferred to hospital the conditions from which they are suffering may be accentuated or prolonged and the extent of neurotic disorder in the population may be greatly increased.
>
> "Every effort must therefore be made after the preliminary treatment, and whenever it is possible to do so, to send such patients back to their own homes, under escort if necessary. It will, however, be necessary in many cases to provide for sending these cases home, and consequently the question of transport and escorts will have to be considered by those responsible for organizing the aid posts. Such arrangements are not likely to be difficult where the patients reside in the area where the raid occurs, but in the case of patients occupied in the vicinity but living in the outer area some difficulty may be experienced, and therefore it is a contingency which should be borne in mind in advance. The services of some organization which is arranging to send other patients to their homes from hospital might be made available (see Emergency Medical Service Memorandum No. 2, paragraph 29).
>
> "As it will rarely, if ever, be possible for a specialist to visit an aid post it will be necessary for the medical officer to evacuate those whom it has not been found practicable to send home to a 'casualty' hospital.
>
> "Again, it cannot be hoped that there will even be a specialist on the staff of every casualty hospital, and therefore the medical officer of the aid post should ascertain which of the 'casualty' hospitals nearest to his aid post is so provided. This will avoid unnecessary delay in getting the needs of the case decided. The desirability cannot be over-stressed, however, that in circumstances that may be expected in a future state of emergency every patient suffering from a neurosis, unless the symptoms are so severe or prolonged as to make this course impossible, should be sent home. General practitioners should not send cases arising in their private work to first-aid posts but direct to the special clinics which will be set up in connexion with casualty and intermediate hospitals."

The Board of Education in a recent circular draws attention to the need for greater provision for the social and physical development of boys and girls between the ages of 14 and 20 who have ceased full-time attendance at school. This problem, the circular states, has long been neglected in this country, and in spite of the efforts of local authorities and voluntary organizations less than half of these boys and girls belong to any organization which can cater for their needs. Further, the conditions produced by war, the "black-out," and the strain and disorganization of family life constitute a serious menace to youth. The Board has accordingly undertaken a direct responsibility for youth welfare, and has appointed a National Youth Committee to advise it, while a special branch of the Board will deal with grants and other administrative duties. This National Youth Committee will have as its counterpart local committees, which in some cases will be subcommittees of the local authority and in others will represent all local interests. These committees will ascertain local needs, decide where help can best be given, and plan future development. It will not be their task directly to conduct youth activities, but to strengthen the hands of local authorities and voluntary organizations.

Correspondence

R.M.B.F. Christmas Gifts Fund

SIR,—I write on December 1 to acknowledge the sum of £278 13s. 6d. which has been received in donations towards our Christmas Gifts Fund. This will enable us to distribute gifts to our annuitants, but we also have 300 to 400 beneficiaries on our books who are in receipt of regular and annual grants. Their circumstances are similar to those of our annuitants, and in previous years they have also received the Christmas Gift. I should be very grateful if those of your readers who have not yet contributed would send a donation, however small, addressed to

Royal Medical Benevolent Fund,
Christmas Gift Account,
Wormingford, Essex.

At Christmas, 1938, we distributed £1,174, and I hope we may be able to do the same again this year, but time is short.—I am, etc.,

THOS. BARLOW,
President.

Active Service Medical Societies

SIR,—In times of stationary warfare, and particularly in the winter months, it becomes necessary to invent schemes for the counteraction of boredom and the maintenance of interest and efficiency. For the medical services there can be nothing better for this purpose than the medical society, with all its opportunities for exchange of "shop" and useful information, and with as regular and varied a programme as circumstances may permit. Medical meetings, whether under the auspices of a local society or not, played their part in the last war and are sure to be revived. Such societies may be small or large and based on an army or a corps, or have their centre at a base, or in hospitals and training areas at home. They can combine a social with scientific purpose, and their meetings should not become too formal. In the case of the Expeditionary Force they should be able to draw upon consultants or medical or surgical specialists attached to base hospitals and casualty clearing stations for papers on clinical topics. Talks among ambulance and regimental officers on aspects of their work can be equally valuable if less clinical. Pathologists and medical officers connected with sanitation and the many-sided problems of venereal disease should also have their contributions to make. Directors or assistant directors of medical services may be very profitably invited to give instruction and advice on administrative subjects and to recount experience of other campaigns to units mainly composed of civilian doctors.

The educational approach to the venereal disease problem—as opposed to the mere provision of preventive packets—and how it may best be organized for different types of unit and different ranks inevitably requires free discussion in our younger modern army. The practical and theoretical implications of the surgical methods advocated by Trueta; the known and possible contributions, and also the dangers, of sulphonamide treatment in sepsis, pneumonia, meningococcal meningitis, and gonorrhoea; the management of shock and chest wounds; the old P.U.O. problem—all these should provide food for discussion even before the advent of battle. Few problems call for more careful consideration than that of D.A.H. or soldier's heart. Many physicians, in retrospect, must feel convinced that there was a wholly unnecessary sick wastage from this cause in the last war and that physical and infective factors (as opposed to emotional factors) were far too extensively blamed; even by cardiologists of distinction who had not seen cases in their early stages and in their causal environment. A large proportion of all cases could have been reclaimed by simple psychotherapy and physiotherapy, without hospitalization or invaliding and with a great saving of expense to the country. The soldier is a simple and sensible fellow for the most part, but, like the civilian, he can either be made into an invalid by a wrong treatment or label or cured of many of his functional disorders by straightforward explanation and reassurance and short respites from bad conditions. Reminders of the advantage of re-educational camps, instead of hospitals, for all the minor neuroses (a late lesson of the last war) cannot be brought too soon to the notice of the whole medical service.

A lending library at the base and a system of circulation of important journals, manuals, and reprints should not be beyond the dreams and the scope of the best-organized army medical corps in the world. The keeping of medical notebooks and diaries should everywhere be encouraged.

Many of us look back upon our medical and surgical experience of the last war as one of the most vivid and instructive experiences of a lifetime. The good comradeship, the complete absence of the competitive evil, the living and working at close quarters of friendly teams, the direction of unanimous effort to the one object of doing the best possible both for the Service and for the individual sick or wounded soldier, sailor, or airman—all these provide an atmosphere which might with advantage, but does not yet, exist in our less united and less whole-hearted civilian organizations.

With the addition of research teams and base or army schools or instructional courses the welding and evolution of the military medical machine in time become complete and lend full support and inspiration to the common cause. The particular functions of the medical society are to bind and to leaven the official work, to facilitate exchange of views, and to maintain enthusiasm and the spirit of inquiry essential to all good medical service. We are all confronted with a new phase of postgraduate education, and Osler's happy reflections on "The Educational Value of the Medical Society" are as worthy of attention in war time as in times of peace.—I am, etc.,

Cambridge, Dec. 11. JOHN A. RYLE.

Evacuation of Small Children

SIR,—The evacuation of small children between the ages of 2 and 5 introduces major psychological problems. Schemes for evacuation are being thought out, and before they are completed we wish to draw attention to these problems.

There are dangers in the interference with the life of a toddler which have but little counterpart in the case of older children. Evacuation of older children has been sufficiently successful to show, if it were not known before, that many children over 5 can stand separation from home and even benefit from it. It does not follow from this that the evacuation of smaller children without their mothers can be equally successful or free from danger.

From among much research done on this subject a recent investigation carried out by one of us at the London Child Guidance Clinic may be quoted. It showed that one important external factor in the causation of persistent delinquency is a small child's prolonged separation from his mother. Over half of a statistically valid series of cases investigated had suffered periods of separation from their mothers and familiar environment lasting six months or more during their first five years of life. Study of individual case histories confirmed the statistical inference that the separation was the outstanding aetiological factor in these cases. Apart from such a gross abnormality as chronic delinquency, mild behaviour disorders, anxiety, and a tendency to vague physical illness can often be traced to such disturbances of the little child's environment, and most mothers of small children recognize this by being unwilling to leave their little children for more than very short periods.

It is quite possible for a child of any age to feel sad or upset at having to leave home, but the point that we wish to make is that such an experience in the case of a little child can mean far more than the actual experience of sadness. It can in fact amount to an emotional "black-out," and can easily lead to a severe disturbance of the development of the personality which may persist throughout life. (Orphans and children without homes start off as tragedies; and we are not dealing with the problems of their evacuation in this letter.)

These views are frequently questioned by workers in day nurseries and children's homes, who speak of the extraordinary way in which small children accustom themselves to a new person and appear quite happy, while those who are a little older often show signs of distress. This may be true, but in our opinion this happiness can easily be deceptive. In spite of it children often fail to recognize their mothers on returning home. When this happens it is found that radical harm has been done and the child's character seriously warped. The capacity to experience and express sadness marks a stage in the development of a child's personality and capacity for social relationships.

If these opinions are correct it follows that evacuation of small children without their mothers can lead to very serious and widespread psychological disorder. For instance, it can lead to a big increase in juvenile delinquency in the next decade.

A great deal more can be said about this problem on the basis of known facts. By this letter we only wish to draw the attention of those who are in authority to the existence of the problem.—We are, etc.,

JOHN BOWLBY.
EMANUEL MILLER.
D. W. WINNICOTT.

London, W.1, Dec. 6.

Psychological Casualties in War

SIR,—Dr. R. D. Gillespie's reply (*Journal,* December 2, p. 1110) to my letter (November 18, p. 1020) accuses me of polemics resembling Hitlerian propaganda. He makes use also of that least admirable of arguments, the sneer. I am in fact an admirer of the ingenuous Socratic method, and believe myself to be quite unskilled in the subtler technique of Goebbels. "The assertions made," Dr. Gillespie says, "are so roundly extravagant as to stupefy opposition." The heavy artillery of authority is brought to bear on me, although I introduced my main contentions with the words "I think" or "I believe." I think this is not the method of assertion.

Strangely enough, I appear to have a greater belief in the need for Dr. Gillespie's special line than he himself has. In the recent years of so-called peace the demand for psychological treatment has been such that some patients were promised treatment at one centre in the quite remote future. The period of waiting was two years or even longer. Here was an urgent problem which I, and at least some others, believed the war would make more urgent. The departments attached to general hospitals are valuable, and some patients prefer to attend these. I think, however, that Dr. Gillespie will find it difficult to convince general practitioners that they should not send their patients to "psychotherapeutic centres" which exist apart from general hospitals. In his letter in your issue of November 4 (p. 926) he says of such centres, "The divorce of psychotherapy from general medicine is apt to have as its consequence a divorce from sanity." We allow the aurists and oculists to have buildings of their own without protest. We even have a hospital for diseases of the rectum. Why deny the psychotherapists centres of their own? All specialists have to guard against a too narrow professional outlook, no matter what sort of building they attend.

Dr. Gillespie says, "No psychiatrist will agree that 'any of us is capable of being [*I wrote becoming*] psychotic.'" I had hoped that this idea was at least worth thinking about. It was in any case not asserted, but presented as a personal belief and a corollary to the hypothesis that in fortunate circumstances potential psychotics might fail to become actual. It is surely heroic to postulate for anyone an absolute immunity to psychosis. There is evidence in favour of my suggestion which goes some way towards proving it. Psychosis is sometimes cured. We might consider the cured psychotic as someone who has recovered from an illness that "the flesh is heir to." In the *Journal* not long ago you published an account of some cases of certified psychosis for whom it was claimed that dental treatment cured them. Various infections, toxaemias, and poisons have the effect of producing as a by-product symptoms of psychosis, and even clear-cut psychotic syndromes—for example, Korsakow's psychosis and G.P.I. A large book has been written by Dr. W. K. Anderson on malarial psychoses. Individual predisposition, rightly emphasized by Dr. Gillespie, may be a factor in all such cases, but how far is it a factor? Stress or trauma of some kind is, I believe, also a factor in every case of psychosis, and every human being has, I think, a threshold of vulnerability.—I am, etc.,

London, S.E.14, Dec. 3. ALLAN A. MACDOUGALL.

Treatment of War Fractures by the Closed Method

SIR,—Dr. Trueta's address on this subject, published in the *Journal* of December 2 (p. 1073), is one which every surgeon who may be called upon sooner or later to deal with wounds from war missiles should read with care. His conviction that to avoid true shock—that is, septic infection—operations for compound fractures must be performed within a time limit of two hours is one with which we shall all agree. If wholesale bombing of large cities should ever be indulged in this optimum time will, I am afraid, be very often exceeded.

The outstanding lesson of the last war as regards surgical treatment was that complete débridement of wounds was the first great essential, especially the complete exposure of the whole track of a wound and the ruthless cutting away of any dead or dying muscle. The rough-and-ready methods of deciding if muscle is in either of these conditions as evidenced by its appearance—pale pink instead of a deep red colour—and its failure to contract when nipped by dissecting forceps, are the only practical rules for the surgeon's guidance. When he has carried out these essential principles, and if the optimum time has elapsed, what guarantee has the surgeon that he has forestalled all risk of sepsis from *B. welchii* or streptococcus? The answer is, None.

If that is so there is one sentence in Dr. Trueta's address which is worthy of special notice: "When in spite of this excision there is still doubt about the vitality of the tissues that remain . . . it is essential to wait two or three days before putting on plaster." This is sound advice indeed, and it needs to be stressed; because the impression had got about that Dr. Trueta advocated the use of plaster-of-Paris in *all* cases. By covering up a doubtful wound in a plaster case the surgeon will thereby deprive himself of the use of two faculties which should warn him that all is not well with the wound. The information to be gained from the use of eyes and nose is too precious in doubtful cases to mask it under a covering of plaster.—I am, etc.,

York, Dec. 3. J. G. CRAIG.

Bipp

SIR,—In the *Journal* of December 9 (p. 1164) I see a letter with the heading "Bipp." The writer evidently does not know the true composition of it or its history, or of the fact that it was conceived by a very distinguished Newcastle surgeon, the late Professor Rutherford Morison, during the great war. After his discovery of this substance he was asked to go over to France to instruct the Army surgeons there how to use it, and he did. Whoever the individual was who gave the formula given in the letter was wrong. Undoubtedly Morison's "bipp" did revolutionize the treatment of war wounds. To put the matter beyond dispute I quote a passage from a letter sent by Professor Morison to one of his old house-surgeons, Professor Willan of Newcastle. On May 27, 1916, he writes:

> "You will be glad to hear I have accomplished the greatest thing for surgery in this war. I have discovered an antidote to true sepsis, and we are now about to leave dirty wounds undressed for a whole month. Think of what this means for compound fractures. Programme: open up and clean the wound; mop it out with spirit, then fill it with paste and cover with dressing. Paste: Iodoform two parts, bismuth subnitrate one part, paraffin q.s. to make a paste. Compound fractures have done with a dressing which has been left for two to four weeks, and several of them have united in less than six.
>
> "It took twenty-five years to make surgeons believe I could get large aseptic wounds to heal without drainage under a single dressing. I hope that the same time will not be taken in getting the same belief accepted for septic ones, but I fear it. There is

another thing I fear, and it is that we may discover drawbacks; I am honestly looking out for them, but so far without success."

The original "bipp" contains neither glucose nor balsam of Peru nor bismuth subgallate. I like to see honour given where it is due.—I am, etc.,

Newcastle-upon-Tyne, Dec. 10. Robt. A. Welsh.

Relapses after Sulphonamide Treatment of Gonorrhoea

Sir,—I have read with much interest in your issue of December 2 (p. 1080) the article by Mr. A. J. Cokkinis and Dr. G. L. M. McElligott on relapses after sulphonamide cure of gonorrhoea. I am afraid that some of us at the Whitechapel clinic were rather doubtful about the success of these "cures," and we have been justified subsequently by the number of relapses which have occurred, both early and late, during the period of observation. It was with this point in view that some considerable time ago the period of observation in females was extended from three to six months, and that also one set of tests at least was taken during the monthly menstrual period. This course seems now to be necessary.

There are three factors which lead me to expect a further increase in relapses, namely:

1. The marked increase in the defaulter rate since the institution of sulphonamide treatment: many cases disappear as soon as all symptoms have gone, before ever submitting to a proper test of cure or before the test of cure is completed.

2. The neglect of attention regarding the complement-fixation test. With this I know many people will disagree, as great variation occurs with regard to its interpretation. In my own experience I am convinced that a patient with a strongly positive (++) or a positive (+) reaction should be viewed with great suspicion when assessing a test of cure, while *one* single negative test should never be regarded as concrete evidence of cure.

3. The last factor is the failure to include in the tests of cure a culture, plate if possible, from the posterior vaginal fornix, where infection may be most persistent.

In conclusion, it would appear to me that since the advent of sulphonamide treatment there has been a marked increase in the so-called gonococcal carrier. I should be glad of the views of other readers on this point.—I am, etc.,

W. Neville Mascall,
Chief Assistant Medical Officer.

L.C.C. (Whitechapel) Clinic,
London, E.1, Dec. 5.

Sir,—We welcome the article of Mr. Cokkinis and Dr. McElligott in your issue of December 2 as emphasizing the importance of the recognition of late relapses in the sulphonamide treatment of gonorrhoea, and particularly of the necessity for cultural examination. This was evident to us some months ago, and as a consequence a circular letter was sent out in May of this year by Dr. Newsholme, medical officer of health for Birmingham, to the medical practitioners of the Birmingham area.

But with many points and conclusions in the paper we cannot agree. The authors state that their relapse rate on 1,055 cases works out at 12 per cent. They then proceed to say that more relapses *must* have occurred; we think that such an assumption is, to say the least, unproven. In Table I, by some mysterious process, they raise this relapse rate to 27 per cent. We cannot follow the mathematical conclusions of Table I; apparently they add up the percentages in the right-hand column. Now supposing they carry the time group a little further and, say, in over fifteen months one patient presents himself and is found to be a relapse. The item in the table will then read:

Time Group	Followed-up Cases	Late Relapse	Late Relapse Rate
Over 15 months..	.. 1	1	100 per cent.

They will then obtain a relapse rate of about 127 per cent.!

The Table III intended to be a comparison of three different preparations has many points which would not be good evidence. The number of cases taken for each group of drug differs very widely; the dosage, so far as we can gather, is entirely different. In many cases gonococci were not even present when the sulphonamide treatment began; surely "suspected gonococci" is insufficient evidence in an investigation of this kind. Such factors, in our view, would need a completely reconstructed table, if indeed one could make out a reliable comparison at all on the available information.

Later on in the article we read: "In most cases of proved female gonorrhoea gonococci are demonstrated only in the urethral discharge in spite of the fact that signs of cervicitis are usually present." Frankly, we fail to understand this statement; it is entirely new to us and, we feel sure, to many others. In our clinic we take as routine in all cases of suspected gonorrhoea in the female films and cultures from cervix, urethra, and rectum. In 100 consecutive cases, on the initial examination gonococci were found in both cervix and urethra 57 per cent., in urethra alone 9 per cent., in cervix alone 31 per cent., in rectum alone 3 per cent.

In conclusion, we wish to state that after giving trial to the three drugs sulphanilamide, sulphapyridine, and uleron, we have no doubt that the best of these is sulphapyridine (M & B 693). We have now used sulphapyridine as routine in well over 1,000 male and female cases, combined with vaccine treatment and, in females, local treatment. Our relapse rate works out at 13 per cent. approximately, and many of the cases have been under observation over a year. We admit the possibility or even the probability that such a percentage may have to be reconsidered as the period of observation becomes longer, but we hope not to the degree which has been suggested in the article under discussion.—We are, etc.,

E. W. Assinder,
G. H. Knight.

Venereal Diseases Department, General
Hospital, Birmingham, Dec. 6.

Sir,—In their highly interesting analytical paper on the above subject in the *Journal* of December 2 (p. 1080) Mr. A. J. Cokkinis and Dr. G. L. M. McElligott suggest that the longer treatment and more frequent need for multiple courses with sulphanilamide may account for the lower incidence of late relapses as compared with treatment by sulphapyridine (M & B 693). May I suggest another factor as likely to contribute to this difference in late relapse rates. The patient who under treatment with sulphapyridine has got over his early difficulties with little trouble and no relapses is more likely to report again for treatment in the case of a late relapse instead of becoming discouraged and defaulting as in the case of one who has had early relapses. This is true in spite of the fact that patients are more likely to report their condition if they relapse than if they remain well. On this hypothesis it is probable that the late relapse rate after treatment with sulphonamide compounds is higher than 20 per cent.

In regard to the question of delayed treatment it is not clear whether the figures analysed refer only to randomly selected cases in which the treatment was withheld until the second week or include those cases which did not report before that time. One might with reason regard patients who report in the first and second weeks respectively as belonging to different populations. It is probable that among those reporting in the first week there is a greater proportion of more acute cases, whereas in the second week one is likely to get a self-selected group in which the disease is held in check to some extent by natural resistance or in which the infection has been less severe. It does not follow that withholding treatment for a week from the former group would enable them to attain the same measure of immunity as this latter self-selected group. Again, among the more severe cases in this latter group there is likely to be a higher proportion of the haphazard type of patient who might fail to report late relapses. These considerations suggest that at least when the groups of first- and second-week cases are self-selected one might expect to get figures showing a lower incidence of early and late relapses in the second-week group.

May I conclude by expressing my appreciation of the value of the important paper on which I have based these comments.—I am, etc.,

Rochester, Dec. 2. A. Gardner, M.B., F.S.S.

Painless Injections of Sulphapyridine (M & B 693 Soluble)

SIR,—Post-operative pneumonia has for many years been the bugbear of surgeons. The blame has at times been cast upon the anaesthetists, but it has been found that this complication may follow spinal and even local anaesthetics. The introduction of sulphapyridine (M & B 693) has given us a valuable remedy in dealing with post-operative pneumonia, but there are certain difficulties in its use. Sulphapyridine taken by mouth is apt to cause nausea and sometimes vomiting. This may be a serious matter in the post-operative care of an abdominal operation, not only on account of the pain and discomfort of vomiting but also because it may cause confusion in diagnosis, it being difficult in some cases to be sure that the vomiting is due to the drug and not to some intra-abdominal complication. For these reasons the intramuscular route after abdominal operations is preferable, but the patients complain of intense pain when given the injection. This is probably due to the drug reaching the subcutaneous tissues either on the outside of the needle or during the insertion and withdrawal of the needle.

To overcome this difficulty I have introduced a two-syringe technique. (1) A 1 c.cm. Record syringe with a No. 2 serum needle is filled with 1 per cent. novocain, a weal is made intradermally, and the needle is driven through this, injecting a little novocain as it goes, until the needle is in the muscle, when 1/2 c.cm. of novocain is injected. The syringe is then detached from the needle, which is left in place. (2) A 5 c.cm. Record syringe with a large needle is used to draw up the sulphapyridine. The syringe is detached from the filling needle and attached to the needle in the patient, and the drug is injected. The empty 5 c.cm. syringe is detached from the needle and the former 1 c.cm. syringe, containing about 1/2 c.cm. of 1 per cent. novocain, is reattached. About 1/4 c.cm. of novocain is injected to clear the needle, which is then withdrawn while the rest of the novocain is injected into the track to prevent any of the sulphapyridine escaping up the track after the needle has been withdrawn. The site is massaged to move the skin on the deep tissues to close the track. If the order of events is followed as detailed above, while the ampoule of sulphapyridine is being opened and the syringe filled the novocain has time to act. The injections are painless when given this way. The patients say they are painless—and not only the nurses, who so frequently report that a patient is "quite comfortable" twenty-four hours after a laparotomy!—I am, etc.,

Hove, Sussex, Nov. 22. H. J. MCCURRICH.

Treatment of Varicose Ulcers

SIR,—It was with interest that I read Dr. J. R. A. Davies's letter (November 25) on the treatment of varicose ulcers by elastic adhesive occlusive dressings. As a dermatologist I have seen numerous cases in which this treatment has been used for this purpose, with the result that eczema, often of the eczema rubrum type, has developed on the leg treated and/or a generalized eczema has started. Years ago I came to the conclusion that if there is the slightest concurrent varicose eczema present, as is often the case, along with varicose ulceration, then the application of elastic, adhesive, and occlusive dressings is absolutely asking for trouble in the form of further skin disorder. After all, most varicose ulcers can be healed by rest or by the application of the old-fashioned Unna's zinc-gelatin supporting bandage. In my opinion the use of the zinc-gelatin bandage, when properly applied and renewed at correct intervals, is still one of the best methods of treating varicose ulcers and/or varicose eczema, although I have also found local applications of Grenz rays to be very useful in eczema rubrum of the legs.

It has been my routine practice for some years, when referring cases of varicose eczema and/or ulceration from the skin department to the varicose vein clinic at the Leicester Royal Infirmary, to send along a note asking them to use no elastic adhesive occlusive dressing. There may be three factors which can cause trouble in such treatment.

1. The locking up of the broken-down tissue products and the damming up of the excretions and secretions of the skin, with their resulting absorption into the system.

2. One of the substances used in the manufacture of these elastic adhesive occlusive bandages coming into prolonged contact with either unhealthy or normal skin, usually the former in these cases, may set up trouble. The composition of the sticky substance on these bandages is usually a mixture of rubber and an oleo-resin, either of which may give rise to trouble on some skins.

3. It is a well-known fact that in many people suffering from or predisposed to eczema the continuous application over any area of skin of even a fairly large-sized piece of plain zinc oxide adhesive strapping for a few days will often start up an eczematous condition under it.

The first factor is partly dealt with by the fact that some of the discharge can escape through the bandage and be wiped off whilst *in situ*, together with the periodical removal and reapplication of the bandage after suitably cleansing the area covered. The second is now apparently realized by the makers of the dressings themselves, by the fact that they market these bandages in the form of half-plastered-width bandages for the same purpose in which only a very small area of the sticky substance, at the beginning of the bandage, comes into direct contact with the skin surface, and this piece is generally under the thick skin of the sole of the foot, which part is not very easily irritated. The third factor cannot be dealt with. Ask anyone who has ever had to have some broken ribs strapped up with adhesive plaster on their skin if after a few days of such treatment they did not feel like giving a very good imitation of a choreic chimpanzee working overtime, in their desire to scratch that area. From what some patients suffering from "a bad leg" treated with elastic adhesive occlusive bandages have told me, this is trivial compared with the irritation they sometimes get while undergoing this treatment, resulting frequently in a "Blitzkrieg" of scratching and further trauma of the insulted dermis.—I am, etc.,

Leicester, Dec. 6. F. A. E. SILCOCK, M.D., D.P.H.

Conservation of Cervix in Prolapse Operations

SIR,—May I say how much I have been interested in Dr. J. W. A. Hunter's paper on the conservation of the cervix uteri (*Journal*, November 18, p. 991). In my opinion he has drawn attention to a most important point. For my own part I have been fortunate in not having had any Caesarean sections following amputation. In addition to the reasons mentioned there is one great objection to Schroeder's amputation—namely, its liability to be followed by a secondary haemorrhage about the seventh or eighth day. A bleeding cervix is an awkward complication which usually necessitates bringing the patient back to the theatre and the insertion of stitches. In the usual high amputation, and in Emmet's trachelorrhaphy, the dangers of post-operative haemorrhage are very slight. Emmet's operation is simple to perform and is a most satisfactory method of treating an old laceration.

I was very glad indeed to see Dr. Hunter's reference to the operation of vaginal fixation, which would seem to be a valuable method of dealing with certain cases of prolapse. For several years I have been in the habit of performing a somewhat similar operation—namely, vaginal suspension—and I find that as time goes on I employ it more frequently than formerly. In some few cases in which a period of sterility has preceded operation pregnancy has occurred and labour was uneventful. Cullen of Baltimore produced excellent illustrations of this operation, which, with his kind permission, I reproduced elsewhere. Very briefly the steps are as follows. The anterior pouch of peritoneum is opened, two or three long suspension sutures are inserted into the anterior surface of the uterus, and the long ends of these sutures are passed, respectively, on each side through the peritoneum and through the vaginal mucous membrane about a quarter of an inch from the edge of the colporrhaphy incision. Clips are then put on these sutures and the colporrhaphy is completed. The uterus is now drawn gently forwards by the suspension sutures, which are then tied.

As Dr. Hunter's paper has reference to prolapse, perhaps I may be allowed to mention one last point. Of recent times the pendulum has swung away from the older operation of interposition. Some few years ago, when in America, I heard the view expressed that interposition was one of the best methods of treating prolapse in an elderly woman in whom there was a large cystocele—that is, a case in which a cystocele is responsible for most of the symptoms. The reason given was that the uterus is thereby made to form a natural shelf for the bladder. There are perhaps objections to the operation, as to many others, but personally I employ it in preference to anything else in certain selected cases of the type just mentioned.—I am, etc.,

Londonderry, Dec. 6. R. E. Tottenham.

Cause of Gastric Ulcer

Sir,—Dr. James Ronald's article in the *Journal* of November 25 (p. 1033) has interested me much as a general practitioner who has believed that it is the high hydrochloric acid content that is largely responsible for gastric ulcer. Dr. Ronald shows that in spite of excess hydrochloric acid the ulcer heals.

So often the determining cause appears to be overwork and over-worry, and especially over-worry, and one has felt there are other factors—perhaps some endocrine disturbance—responsible for gastric ulcer formation beside those of faulty diet, irregular meals, etc. The enzyme or factor that prevents the digestion of the stomach wall ante mortem must, I think, play an important part in gastric ulcer, just as Castle's intrinsic factor has its role in the production of the sequelae of hypochlorhydria and achlorhydria. The stomach of carnivorous animals has, I believe, a far higher hydrochloric acid tolerance than the human stomach. Hog's stomach as ventriculin can supply the lack of Castle's intrinsic factor, and I wonder if the stomach of the carnivora would not supply the factor that may be lacking in the human stomach when ulceration takes place.—I am, etc.,

Tarrington, Dec. 2. H. G. Langdale-Smith.

Fracture of Femoral Condyle

Sir,—I was interested in Professor G. R. Girdlestone's article on fractures in the region of the knee in the *Journal* of December 2 (p. 1099), and would like to ask him a general question regarding operative procedure.

In the section headed "Fracture of One Condyle" he says, "This operation can be done by working through a large window in the plaster." How does he prepare the skin for such an operation? Presumably sterile sheeting would be insinuated beneath the edges of the window during the operation and clipped to skin?—I am, etc.,

Wrexham, Dec. 3. Eric Evans.

*** We submitted Dr. Evans's inquiry to Professor Girdlestone, who has kindly supplied the following answer: Dr. Eric Evans asks for details of my technique of operating through a window in plaster-of-Paris. This has been developed as a result of the experience of performing spinal fusion in many cases of scoliosis corrected by the Risser technique. The points are:

1. Previous preparation of the skin with ether and, say, 1 per cent. iodine in spirit. When the patient reaches the operating table it is necessary to:

2. Dust the area with a mop of gauze on a pair of forceps, discarding the gauze and forceps.

3. Cleanse with ether, fresh mop, fresh forceps, starting in the middle and spiralling outwards, again discarding gauze and forceps.

4. Repeat twice with iodine swabs.

5. Apply miniature sterile towels, say 10 inches by 20 inches, placing them very accurately round the window overlapping each other, then carefully expose the area of incision and fix the towel edges to the skin with Michel clips (preferably of the large strong type). These miniature towels can be handled far more exactly than larger ones.

6. Place ordinary sterile towels over the miniature towels to enlarge the sterile field.

N.B.—All the final procedures are best carried out by the surgeon himself, as meticulous care is required.

Stored Blood for Transfusion

Sir,—In the *Journal* of November 4 (p. 908) J. L. Hamilton-Paterson's paper on the use of stored blood for transfusion raised the whole question of the value of such blood. The question is not directly raised by the author, but is implicit in two of his conclusions—namely, that "dramatic improvement is less frequent than when fresh blood is used," and that "blood regeneration is slower." If these statements are confirmed they will doubtless be of far-reaching importance. However, I feel that it should be made clear that at present these conclusions are in the realm of clinical impression rather than of scientifically established fact.

The cases which illustrate the paper give uncertain support for the author's deductions, since the patients include many (for example, gastric ulcers, ulcerative colitis, etc.) who may have bled again after transfusion, and other cases (for example, lung abscess) whose toxic process presumably also continued after transfusion. It is difficult to estimate with any degree of accuracy by haemoglobin readings the value of a transfusion in such circumstances. Moreover, the number of such records in several cases is too small, and in some cases they were ill timed, so that the effect of transfusion cannot be differentiated from the patient's own blood regeneration. Further, haemoglobin percentage is misleading in a case of acute haemorrhage unless there is some indication of circulating blood volume, since the value of a transfusion may be chiefly in increasing blood volume, and may give rise to no increase in the *concentration* of haemoglobin.

There is no reference to the effect of transfusion on the blood pressure in the cases of acute haemorrhage. No records of red cell counts are given, and no cases transfused with fresh blood are described for comparison. It would be a pity if the value of stored blood were to be widely doubted upon such evidence as this, and it is clear that much more work is required before an opinion can be formed.—I am, etc.,

Adrian C. Kanaar.
Nov. 20. M.D., M.R.C.P., F.R.C.S.Ed.

Anaesthesia in War Time

Sir,—I was much surprised to read in the article by Professor R. R. Macintosh and Dr. Freda B. Pratt (*Journal,* December 2, p. 1077) the statement that basal anaesthetics such as "avertin, nembutal, and evipan" can be used to allay fear and, therefore, the danger of ventricular fibrillation during chloroform anaesthesia. Surely the consensus is that the association of avertin and chloroform is highly toxic to the liver and that there is real danger of producing acute yellow atrophy of that organ. A statement of this kind in an article deriving from the department of anaesthetics at Oxford can be responsible for not inconsiderable consequences.

While one may subscribe to the view that "CO_2 plays no part in the treatment of patients suffering with respiratory *failure,*" I would like to see also stated side by side the point that CO_2 plays a great part in the treatment of respiratory *depression* (my italics). A false impression might otherwise be created by Professor Macintosh and Dr. Pratt's statement.—I am, etc.,

E. Montuschi,
Hither Green, S.E.13, Dec. 4. Anaesthetist, E.M.S.

Barbiturate Anaesthesia

SIR,—Our attention has been drawn to the fact that in our recent article on anaesthesia in war time (December 2, p. 1077) we omitted to point out the merits of pentothal, a drug which is used extensively in this hospital. In the interests of simplicity evipan was mentioned as representative of the group of short-acting barbiturates of which pentothal is a most valuable member. Our special mention of evipan was because we realized that it is at present the most widely used drug of this group. The good features of barbiturate anaesthesia are seen to advantage with pentothal, which, in our hands, has given consistently satisfactory results.—We are, etc.,

Department of Anaesthetics, Radcliffe Infirmary, Oxford, Dec. 8.
R. R. MACINTOSH.
FREDA B. PRATT.

X-ray Examination of Militiamen

SIR,—In January last by letter I brought to the notice of the War Office the advantages of *x*-ray screen examination of the thorax in respect to acceptance of recruits, receiving a reply that medical examinations would be a matter for civilian medical boards appointed under the Ministry of Health. Incidentally, at the same time I pointed out the value of what may be termed the life insurance history, as, if a recruit had been accepted or rejected as a first-class life, such information would be of obvious value.

I have since followed with interest correspondence subsequent to Dr. J. V. Sparks's letter in the *Journal* of May 13 (p. 1003) in favour of a method of thoracic examination which has been extensively used not only abroad but in large works in this country, which skilled thoracic radiologists can conduct at a negligible cost per individual if the examinations are done *en masse*; but, so far as I am awere, they are not being conducted in the case of recruits. Those with experience of the late war, particularly combatant officers, will recollect how many of the recruits should never have been enlisted. Another aspect of the matter appears, however, to have been overlooked in the correspondence—namely, that, apart from *x*-ray examination of the thorax by recruiting authorities, there is always the possibility for a family doctor to send a prospective militiaman for *x*-ray examination at a hospital if a private radiological fee is not possible, or to a private radiologist for a report, particularly in cases where long knowledge of the patient gives a record of a poor thoracic history.—I am, etc.,

Forest Gate, E.7, Dec. 2. BERNARD LEGGETT.

Virtues of "Brown" Bread

SIR,—Opened by your annotation in the *Journal* of August 5 (p. 289) and by Dr. Alfred C. Jordan's letter two weeks later (p. 426), the reiteration of the superior virtues of wholemeal bread, which is not necessarily the same as brown, may serve as some solace to the public. In normal times the Englishman exercises his right to spend his money as he likes, on pools or white bread, without regard for value obtained, and in these days of "thirty-second" breakfasts his wife is unlikely to experiment with frumenty to redress the loss of vitamin B. But in war time the decision is taken from him, and flour containing a higher percentage of the wheat grain will be milled and sold not because it is popular, nor because his doctor recommends it and the Government thinks it good for him, but because, as Sir Arthur Salter pointed out in *Nutrition and the Public Health*, it is necessary to discourage excessive consumption of the "staff of life."—I am, etc.,

London, S.W.2. Dec. 5. G. D. PIRRIE, M.B., D.P.H.

SIR,—It would appear that many advocates of wholemeal (brown) bread in lieu of white bread lose sight of three facts.

1. White bread, though admittedly lacking in the three important vitamins B_1, B_2, and E, contains more *food* than wholemeal. The average of several comparative analyses by Sir Robert Hutchison shows that, whereas the wholemeal bread contains 6.4 per cent. more non-nutritious ingredients (water, cellulose, and minerals), white bread contains 6.6 per cent. more of the nutritious ingredients (protein, starch, sugar, and dextrin). The only actual food advantage of wholemeal bread is that it possesses an extra 0.2 per cent. of fat.

2. Most people dislike brown bread; they—and especially manual workers—have an almost instinctive preference for white.

3. Your correspondent Dr. Arthur King (*Journal*, December 9, p. 1164) asserts that Italians can from the same quantity of grain turn out seven loaves of brown to six of white. But as the brown loaf contains 5 per cent. more water, as well as more cellulose, the food value of seven loaves is probably only equal to that of the six white. Moreover, as every housewife knows, wholemeal bread rapidly gets dry and stale, and therefore is not an economical asset.

As, however, the poorer classes cannot afford to avail themselves of the varied diet that supplies the vitamins lacking in white bread it is obvious that wholemeal flour is healthier for them. For this reason the enforcement of such a type of flour might be a wise war-time measure.—I am, etc.,

CHARLES M. BEADNELL,
Egham, Dec. 10. Surgeon Rear-Admiral.

Provision of Free or Cheap Milk

SIR,—Before the outbreak of war there existed in Glasgow and elsewhere comprehensive schemes for supplying necessitous children with free meals and a large number of children in the schools with one-third of a pint of milk daily at the price of ½d., the necessitous children receiving this for nothing. The benefits to health accruing from these schemes were acknowledged by all medical authorities. Since the war broke out the children have in many cases not been attending the schools through which the schemes were operated; as a result the whole organization of distribution has fallen into abeyance. The evacuated children are receiving nothing by way of free or cheap milk unless some welfare committee in the reception area decides to undertake the provision of it. So long as there is no question of there being a lack of food, the necessary arrangements should be made between the proper authorities in the evacuation and the receiving areas to ensure the continued working of these schemes. It does not take long for any improvement due to better nutrition to disappear, and the end-result of a long period without the extra food may prove more costly to the nation than would the continuance of the supply.

In addition to the milk schemes for school children there are also in existence schemes for the provision of free or cheap milk to pregnant and nursing mothers, but here again the schemes are not being operated as efficiently or as comprehensively as was previously the case. Is it a case of "women and children last" in this war?—I am, etc.,

Glasgow, Nov. 20. J. JOSEPH, M.B., Ch.B.

Animists and Vitalists

SIR,—In your review of *Life's Beginning on the Earth* (December 9, p. 1141) we read, "Now that vitalism is in full retreat and biochemistry is rapidly advancing . . ." Without inviting a discussion that might be interminable, may I say that it is quite possible for an up-to-date biochemist to be a vitalist or—what is much the same—an animist. Your reviewer's attitude seems identical with that described by McDougall as having existed in the last quarter of the nineteenth century when he wrote, concerning animism, "Its few exponents were generally regarded as survivors from an earlier age, actuated by some theological bias to offer a futile opposition to the conquering march of science" (*Body and Mind; a History and Defense of Animism*, 1911, p. 85). McDougall took a first class in the Natural Sciences Tripos and found in modern science nothing incompatible with animism.—I am, etc.,

London, W.1, Dec. 10. MILLAIS CULPIN.

Personal Hygiene in Syllabuses of Training Colleges

Sir,—The trouble with this subject appears to lie, as Miss F. C. Consitt (*Journal*, December 2, p. 1114) suggests, in the difficulty in agreeing as to what it comprises. This gives rise to the misunderstandings and inaccuracies with which she confronts me.

Miss Consitt would limit personal hygiene to those branches for which we depend mostly upon others rather than upon our own individual efforts, for that is what the word "personal" implies. She cites nutrition, when one man's meat is another man's poison; activity, though rest is often essential; sleep, when even a sermon will not ensure keeping awake; cleanliness, which depends upon the presence of water; warmth, whereas it is the hot countries from which children have to be removed, never from the cold regions; light, when it has to be sacrificed to the whims of the architects. These she classes as fundamental necessities. She omits the two branches without which existence, as such, is impossible—namely, respiration and the production and disposal of our waste products. Without breath there can be no life, and if the waste is allowed to accumulate the living being is soon consumed with the products of its own combustion.

Those teachers who have crossed my path have come from every type of school, and all assure me that they get no sound scientific instruction upon either of these two vital branches and that they are therefore not held responsible for dealing with them among the scholars. Many of them deplore the gap in the syllabus; others do not realize that there is the gap. Some of them are grateful for the help they get from lectures they hear later on the subject.

Dr. Blacktin's treatise on dust tells us that 100 per cent. more foreign particles are to be found in the lungs of the mouth-breathers than in those who breathe naturally through the nose. Dr. Priestley some years ago stated that 80 per cent. of the cases he had examined for deafness were mouth-breathers. Since "gapers in glasses" are to be seen on every side, it is likely that investigation would determine the association of defective sight with open mouths. Yet the unkempt nose passes unnoticed, although, like the city on the hill, it cannot be hid.—I am, etc.,

London, W.1, Dec. 4. Octavia Lewin.

Nicotine and Blood Sugar

Sir,—I have read with interest the annotation on "Lady Nicotine" (*Journal*, December 2, p. 1098), but note that there is no mention of an important effect of nicotine—namely, a rise in the blood sugar. You state, as is well known, that there is a general impression that smoking lessens appetite and that a cigarette will help to stave off a meal, and that many people in times of stress are apt to substitute smoking for food. It occurred to me some years ago that this effect might be due to a rise in the blood sugar. Working in conjunction with Drs. Shaw and Wood in the physiological laboratory in Leeds, I well remember coming down breakfastless in the morning and deeply inhaling the smoke of two cigarettes. I can assure even the most hardened smoker that this is not exactly a pleasant procedure. We found repeatedly that within twenty minutes the blood sugar had risen from a resting value of near 0.1 per cent. to figures of 0.45 and 0.5 per cent., the effect lasting about ten to fifteen minutes. This fact of a rise of blood sugar does not seem to have been commented upon previously, but there is no doubt that it does occur. I am unable to say whether it is due directly to the action of nicotine or to a secondary adrenaline-like effect.—I am, etc.,

Leeds, Dec. 3. John K. Drucquer.

Cancer of the Lung

Sir,—I have had several inquiries regarding my letter in the *Journal* of December 9 (p. 1159). I would like to make it clear that all the figures quoted refer only to mice older than 10 months. This holds also for the last paragraph of the letter.

Our stock of mice is on the whole not very susceptible to tumour growth. About 10 per cent. of the control mice of all ages show tumours of any organ at death. This is not unlike the condition for man; for him about one out of seven or ten deaths is due to cancer of all organs. In the mice of our stock, however, the most frequent tumour is the lung tumour, and mammary or other tumours are rare. As mice younger than 10 months very rarely show tumours of the lung, I have always neglected these in the calculations and used only the figures for mice of older age. As revealed in my papers, mentioned in the letter, we start a dusting experiment with mice about 3 months old, and the dusting goes on for a year. The time factor is important also from the point of view of the dusting. The mice are allowed to fulfil their allotted span of life.

Obviously a man who dies of lung cancer is susceptible to it, and it serves no good purpose to use non-susceptible animals for experiments.—I am, etc.,

London, N.W.3, Dec. 12. J. Argyll Campbell.

The Services

R.N.V.R. OFFICERS' DECORATION

The Royal Naval Volunteer Reserve Officers' Decoration has been awarded to Surgeon Commanders R. Hall and H. Parry-Price.

CASUALTIES IN THE MEDICAL SERVICES

Royal Navy

The official list of missing officers who were serving on the *Rawalpindi* when it was sunk by the *Deutschland* and another German ship includes the name of Probationary Surgeon Lieutenant **Frederick Herbert Weston**, R.N.V.R. Dr. Weston qualified in 1934, taking the M.R.C.S., L.R.C.P., and in the following year graduated M.B., B.S. of the University of London. Before taking up his naval duties he held appointments at the Mayday Hospital, Croydon, and the St. George-in-the-East Hospital, Stepney.

DEATHS IN THE SERVICES

Lieutenant-Colonel **William George Patrick Alpin**, O.B.E., I.M.S. (ret.), died at Richmond, Surrey, on December 6, aged 80. He was born on September 15, 1859, the son of William Alpin, postmaster of Delhi and later of Calcutta, and was educated at Oscott and St. Thomas's Hospital, and took the M.R.C.S. in 1881, the L.R.C.P. in the following year, and the M.D. of Brussels in 1883. He entered the Indian Medical Service as surgeon on April 1, 1884, became lieutenant-colonel after twenty years' service, and retired on January 6, 1910. He had a somewhat varied career in the Indian Medical Service, more so than most men. He was originally posted to Bombay, but soon after joining was transferred to Bengal. After the usual two years' military duty he entered civil employ in Bengal, but a year or so later obtained political employment under the Foreign Office as agency surgeon of Bhopal, Central India. Some two years later he entered civil employ in the United Provinces, where he spent most of his service, finishing up with another spell of military duty. On his retirement he settled at Ealing, where he was in practice for about fifteen years, after which he went to live at Paignton and a few years ago moved to Richmond. He served in the Sudan campaign of 1885, receiving the Egyptian medal and the Khedive's bronze star; in the Chitral campaign on the North-West Frontier of India, relief of Chitral, Frontier medal with a clasp. In 1914 he rejoined for service in the war of 1914–18, when he served first on a hospital ship, afterwards in Egypt, being absent from his practice for about five years. He received the O.B.E. on January 31, 1920. He leaves a widow and several children. Many friends of his own Service will lament the passing of a first-rate officer and doctor and a kindly and genial friend, though most of his friends and contemporaries are already gone, *multis ille bonis flebilis occidit*. He had been a member of the British Medical Association for thirty-three years.

Major **John Alfred Wylde Ebden**, Indian Medical Service, died at Delhi on November 10, aged 48. He was born on

February 20, 1891, and educated at Westminster and London Hospitals, where he gained an entrance scholarship and the Abrahams prize in clinical pathology. He qualified as L.M.S.S.A. in 1914, and graduated as M.B. and B.S.Lond. in 1916, also later as M.S. in 1921, and as M.D. in tropical medicine in 1926. He also took the F.R.C.S. in 1921, and the D.T.M. with distinction of the London School of Tropical Medicine in 1926. After serving as house-surgeon of the Leicester Royal Infirmary, he entered the R.A.M.C. as lieutenant and temporary captain on March 1, 1917, became captain on March 19, 1918, and resigned on July 1, 1919; rejoined as captain on August 19, 1921, and resigned with a gratuity on August 5, 1925. From 1926 to 1929 he served in the Colonial Medical Service in Malaya. He was appointed to the I.M.S. on December 6, 1929, being ranked as captain from January 20, 1924, and became major on July 20, 1932. At the time of his death he was serving as chief medical officer of Delhi. He served in the war of 1914–18. He had been a member of the British Medical Association for eighteen years.

Lieutenant ARNOLD NORMAN FLETCHER CRITCHLEY, R.A.M.C., Supplementary Reserve, was killed recently in a motor accident in France. He was educated at St. George's, and took the M.R.C.S.Eng. and L.R.C.P.Lond. in 1934. After filling the post of resident medical officer of the County Hospital at Dartford he went into practice at that town, where he was honorary medical officer to the Livingstone Hospital. He joined the R.A.M.C. Supplementary Reserve on April 5, 1939, and was a member of the British Medical Association.

Obituary

ANTON VON EISELSBERG

Hofrat Professor Anton von Eiselsberg, the famous Viennese surgeon, died on October 25. At the time of his death he was one of the eight surviving Foreign Corresponding Members of the British Medical Association. He was born on July 31, 1860, at Steinhaus, in Upper Austria, and studied at the Universities of Vienna, Würzburg, Zurich, and Paris, returning in 1884 to Vienna to work under Billroth. After holding surgical posts at Utrecht and Königsberg he became in 1901 chief of the first surgical clinic of Vienna, and was made emeritus professor in 1931. Apart from many important writings between 1890 and 1913, he was responsible for the *Lehrbuch der Chirurgie A. v. Eiselsberg,* published in Berlin. We have received from Dr. John Burke of Buffalo, N.Y., the following appreciation:

His fame was truly international, and there are hardly any civilized lands which have not paid him formal honours. With him an era of surgery becomes history and the Billroth school loses its last active member. It was as an assistant of Billroth's that he visited Lister, to return an enthusiastic advocate of antisepsis.

Even above von Eiselsberg the surgeon stands von Eiselsberg the man. To his patients and associates he will always remain an outstanding example of the nobleman in the truest sense of the word. In his clinic, in contrast to certain other Continental clinics, the physical and spiritual welfare of the patient came before all else, and the assistant or "Operateur" who neglected either was quickly informed of the error of his ways. The Hofrat's own conduct towards patients was a magnificent example. In passing it might be said that one of his more recent papers, "Arbeitsleistung und Arbeitseinteilung einer chirurgischen Universitätsklinik," is one of the finest expositions of the philosophy of the surgeon to be found.

To me the opportunity of working under him as an "Operationszögling" in the I. Chirurgischen Klinik in Vienna will be a happy memory. I think that I may speak for those of my fellow Americans who were privileged to know Anton von Eiselsberg when I say that an outstanding surgeon and a magnificent gentleman has gone to his reward.

By the death of Mr. THOMAS FRASER TODD in France on December 2 as the result of a motor accident Manchester has lost one of the most brilliant of its younger gynaecologists. Todd was a student of Guy's Hospital and qualified in 1931 with the M.B., B.S. and the M.R.C.S., L.R.C.P. He took his F.R.C.S. in 1933, the M.C.O.G. in 1934, and the London M.S. degree in the following year. He acted as house-surgeon and later as a demonstrator in anatomy at Guy's before being appointed resident surgical officer at the Preston Royal Infirmary. His work as a research fellow at the Christie Hospital and Holt Radium Institute in Manchester attracted attention, as did several papers on the treatment of carcinoma of the cervix uteri. He became honorary assistant gynaecologist to the Salford Royal Hospital and was also on the consultant staff of Hope Hospital, Salford, and of Crumpsall Hospital, Manchester. For his work on cancer of the cervix he was awarded a Hunterian professorship by the Royal College of Surgeons in 1938, and he was only recently appointed registrar to St. Mary's Hospitals, Manchester. He was one of the examiners in gynaecology for the General Nursing Council and an active member of the North of England Obstetrical and Gynaecological Society and of the Manchester Medico-Legal Society. Todd volunteered for active service at the outbreak of war and at the time of his death was a major attached to one of the B.E.F. general hospitals in France. His striking figure—he was tall, dark, and always immaculate—and the tremendous energy he brought to bear upon any and every problem soon made him well known. His untimely death at the age of 31 will be deeply regretted by many colleagues and friends in Manchester.

We regret to announce the death on December 3 of Dr. JOHN HARDWICK THORNLEY, consulting surgeon to the Scarborough Hospital, aged 62. A son of Canon Thornley, he was born at Workington, Cumberland, on August 28, 1877, and after schooldays at Cheltenham College entered Edinburgh University as a medical student in 1896. Having graduated M.B., Ch.B. in 1900, he served in turn as house-surgeon to the Edinburgh Royal Infirmary and extra assistant physician to the Royal Edinburgh Asylum, Morningside. He began his long connexion with the Scarborough Hospital as house-surgeon in 1901 and became honorary assistant surgeon in 1909. On retirement from the visiting staff he was elected consulting surgeon and a member of the Board in 1937. During the last war he served over-seas with the rank of major R.A.M.C., and won the Military Cross. Dr. Thornley had been a member of the British Medical Association throughout his professional life. He was chairman of the Scarborough Division in 1922–3 and president of the Yorkshire Branch in the following year.

We regret to announce the death of Dr. H. STEWART BRANDER on December 7 at Keighley, Yorkshire, where he had practised for many years and gained a high reputation as a surgeon. Born in 1880, he entered the University of Aberdeen, graduating M.A. in 1899, M.B., Ch.B. in 1903, and M.D. with commendation in 1906. He first went to Keighley after holding a resident appointment at James Murray's Royal Asylum, Perth, and for more than thirty years gave valuable service to the Keighley and District Victoria Hospital, becoming senior honorary surgeon in 1929. He was chairman of the medical committee, and represented the hospital on the Yorkshire Regional Committee of the British Hospitals Association. Dr. Brander was a founder member of the surgical union which was inaugurated by Lord Moynihan. He joined the British Medical Association in 1911, and had been president of the Keighley and District Medical Society. He represented the town on the Bradford Regional Radium Institute, and during the last war served with the rank of major R.A.M.C. as registrar and surgeon on the staff of the Keighley War Hospital at Morton Banks. After the armistice he was surgeon in charge of the Ministry of Pensions special surgical clinic. He published several papers on surgical subjects in the *British Medical Journal.*

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a Congregation on December 10 the following medical degrees were conferred:

M.D.—T. G. Armstrong.

M.B., B.Chir.—J. R. Squire, J. W. Lacey.

UNIVERSITY OF LONDON

The following candidates have been approved at the examinations indicated:

Third M.B., B.S.—*Revised Regulations:* *‡F. L. Dyson, *‡Lilias M. P. Gairdner, *†J. E. Richardson, *†P. T. Savage, *†Muriel C. Yates, J. C. Ballantyne, Rosalind S. Barclay, Anna M. Berry, G. Beven, Winifred C. M. Bulkeley, A. G. N. Calder, J. Colover, Jean M. Drury-White, P. McA. Elder, G. R. Fisk, J. M. French, F. J. Gillingham, J. F. Hughes, J. P. Irwin, G. C. A. Jackson, R. R. Klein, D. C. Lewin, H. F. Lunn, A. S. Oscier, J. Ll. Penistan, R. W. B. Scutt, Margaret M. Shrubsall, Joyce R. Simmons, S. C. F. Stephenson, M. Ware, Marguerite Watts, Alice Yates. *Old Regulations:* R. Asquith, J. R. Audy, I. H. Baum, R. C. S. Benson, K. M. Bhansali, J. Bleakley, A. D. Bone, J. A. Bowen-Jones, A. R. Bradley, J. R. Caldwell, D. M. F. Carter, C. D. Chilton, J. D. Craig, A. H. Cutting, H. H. Dickson, A. J. Drew, D. A. J. Ebrill, G. R. Fearnley, W. Fine, Betty Fox, H. R. W. Franklin, J. B. Franklin, F. N. Glover, A. C. Greene, W. E. Greenwood, E. R. Gubbay, Violet E. N. Harris, W. R. L. Harrison, C. F. Hawkins, S. R. T. Headley, F. A. Henley, R. N. Herson, R. N. Houlding, P. H. Jayes, J. B. Kershaw, B. Levin, W. S. Lewin, A. E. Loden, I. D. MacDonald, G. C. Mackay, A. H. Millard, H. E. Moody, A. D. Newsholme, D. A. Osborne, F. R. Philps, M. J. Pleydell, B. A. Pomryn, T. M. Ll. Price, H. V. Reeves, Constance M. B. Shaw, H. D. Smith, P. R. Stringer, F. D. G. Thomas, Joan Wagstaff, R. A. White, R. M. Williams, N. N. Wilson. *Group I:* H. A. C. Chalmers, P. W. Clarkson, J. R. Elwell, M. R. Hayes, Kathleen Hodkinson, E. G. Hosking, D. R. M. Jones, A. H. Mayne, R. P. M. Miles, I. H. Miller, J. Newsome, S. D. Perchard, F. H. Scoones, C. J. P. Seccombe, A. S. Sen, A. G. Stephenson, R. D. Ward. *Group II:* O. P. Dinnick, M. M. Ernst, S. T. Hayes, M. H. Kinmonth. *Revised Regulations—Part I:* G. C. Acres, T. A. H. Adkins, A. F. Baldwyn, D. A. Barley, W. R. Barrington, C. J. Bintcliffe, Monica M. Bird, Winifred M. Bond, Frances D. Bosanquet, G. R. Boyes, Barbara J. H. Broadwood, P. M. Burton, Joan M. Cheale, D. R. Christie, F. B. Cockett, D. P. Cocks, O. L. C. Cookson, Dorothy J. Cooper, H. P. F. Corbin, T. H. Cullen, W. Darby, E. R. Davies, J. I. Davies, L. D. de Launay, F. A. Denz, Evelyn M. Eldrid, M. Elias, G. R. Evans, I. G. Fergusson, Joan FitzHerbert, J. Freeman, H. J. Friend, K. Froome, A. D. M. Greenfield, Margaret E. Harker, J. T. Harold, J. R. Hart, D. H. Hennessy, S. W. Hinds, C. A. Holman, L. B. Holt, J. C. Houston, R. E. B. Hudson, W. H. W. Jayne, Anis Jones, Joyce A. Keeping, A. W. Kennett, H. H. Khan, W. S. Killpack, Irene M. V. King, D. R. Livingston, C. D. L. Lycett, Kathleen B. McClintock, D. G. C. Macdonald, M. McFarlane, Jean D. McKendrick, A. Maconochie, E. T. Manley, J. Marks, L. W. C. Massey, R. M. Mayon-White, F. B. Meade, Edith S. M. Merry, J. J. Messent, Margaret Middleton, J. V. Mitchell, R. Moore, B. L. Morgan, J. T. Morgan, Margaret E. Morgans, Sheila M. Newstead, Doreen Nightingale, D. Dixon, A. O. A. Ohannessian, B. C. H. O'Neill, J. W. Paulley, H. T. Phillips, P. D. Rawlence, K. O. Rawlings, H. H. Renyard, T. H. E. Richards, Joan A. Rosmarin, M. H. Rotman, R. W. Rowan, H. A. Rowley, A. F. Rushforth, A. Sakula, A. C. J. Saudek, J. N. R. Scatliff, E. Schlesinger, L. G. Scott, M. A. Shellim, Barbara M. Sibbald, Lesley P. Sitwell, Daisy M. Smith, Irene J. Stark, B. A. D. Stocker, P. H. Sutton, D. R. Syred, Margaret L. Taylor, H. A. Warbrick-Smith, J. A. E. Watts, M. Waytzman, A. Webb-Jones, R. Wigglesworth, D. W. Williams, D. A. J. Williamson, W. Wohlfarth, P. H. Woodcock. *Part II:* R. H. Anthony, Margaret Bennett, C. J. Bintcliffe, Jean R. C. Burton-Brown, Isabella S. Chalmers, I. R. Davies, Jean L. Edwards, Enid J. Fair, R. V. Jones, B. U. Meyer, E. W. Miles, D. A. Miln, Margaretta D. Morrell, A. S. S. Playfair, J. D. Randall, G. F. Smart, B. J. D. Smith, B. E. C. Stanley, May D. Westerman, Elizabeth Whatley, H. Wormald. *Part III:* Eileen M. Benison, F. Luckett, D. Munro-Ashman.

Postgraduate Diploma in Psychological Medicine.—*With Special Knowledge of Mental Diseases:* D. W. Abse, Sophie Bookhalter, H. S. Joseph, W. A. O'Connor, J. D. Sutherland, J. D. Uytman. *Part A:* C. Phillips.

* With honours. † Distinguished in pathology.
‡ Distinguished in medicine.

UNIVERSITY OF DUBLIN

School of Physic, Trinity College

The following candidates have been approved at the examinations indicated:

M.D.—A. H. Smith. D. H. T. Duggan.

Final Medical Examination.—*Part I, Materia Medica and Therapeutics, and Pathology and Bacteriology:* †S. T. McCollum, †H. Lesselbaum, †Gladys M. Byers, †Lourenza C. Steytler, †L. H. Citron, A. H. H. Guilbride, T. A. H. Black, W. Badner, Florella Starritt, Emmeline P. Crowe, B. Marcus, C. R. Griffin, M. E. Weiner, D. O. Hicks, L. H. Shrago, M. J. M. Solomons, Dorothy H. Webster, P. C. Smyly, N. J. Anderson, Kathleen M. Patterson, A. C. McReynolds, S. Smullen, N. H. Stewart, M. G. Jackson-Smyth, S. D. Killen, A. G. Barnsley, J. P. Walsh, J. G. P. Mullally. *Part II, M.B.:* *P. M. Goedvolk, *H. H. Balch, †J. McD. Dougan, †E. G. Millar, †G. O. Atkinson, †Maureen C. Johnston, †H. D. Chomse, J. H. Tyrrell, P. H. Rubenstein, K. T. Acton, M. N. O'Riordan, S. Tennenbaum, M. H. Waters, Annie Dowds, J. L. Handelman, S. F. H. Haughton, J. H. Acton, P. C. Denham, W. M. Winn, M. Polansky, J. Morris. *B.Ch.:* †Muriel Bannister, †R. G. P. Heard, †J. C. G. Moore, †C. W. Bradfield, †D. Selman, †E. G. Millar, W. E. Bamford, B. S. Good, J. McD. Dougan, S. Fine, Kathleen Dowling, J. H. Tyrrell, G. F. N. Anderson, H. J. Draffin, Moira M. Mallagh, G. A. Anderson, N. J. Hogan, R. W. Carey, Sheila Kenny, Lucia M. E. FitzGerald, E. F. Keating, P. FitzG. Longford, P. C. Denham, T. N. Arthur, D. A. Huggard, W. Jones, R. Brass, A. H. Isaacson, R. F. G. Lyons, G. E. P. Kelly, D. St.B. F. Nunan, M. Shreider, R. R. Hogg, G. O. Atkinson, L. N. Lynch, I. Shreider. *B.A.O.:* *H. FitzGibbon, †Caroline A. McEvett, †Margaret Sutcliffe, †E. Kawerau, R. J. S. Wilson, P. FitzG. Longford, Frances M. C. Wolfe, H. Menter, J. H. Acton, D. Aiken, W. F. Rogers, Isabel M. Woodhouse, Lois J. Macaulay, J. I. Stafford, G. H. Blennerhassett, D. R. McCaully, S. D. Reid, P. H. Rubenstein, J. G. P. Mullally, D. O. Hicks, H. F. Kamp, N. Marks, Margaret L. Campbell, H. Hutchinson, H. J. Smith.

Diploma in Gynaecology and Obstetrics.—M. M. Abou Ragab.

Diploma in Public Health.—*Part II:* T. S. Agnew.

* First-class honours. † Second-class honours.

Medical Notes in Parliament

Before adjourning for the Christmas recess Parliament completed consideration of the Expiring Laws Continuance Bill. The House of Commons had a secret sitting to discuss the organization of supplies. It also heard a statement about the operations of the Royal Air Force, and discussed allowances to the unemployed and also old age pensions.

The Parliamentary Medical Committee met on December 12, Sir Francis Fremantle in the chair, and again considered the prevalent propaganda against vaccination and inoculation. The committee decided to inquire about the effect of this propaganda in the Forces. Discussion arose on the treatment of psychoneuroses in the field. It was decided to inquire whether the recommendations which had been made by a War Office committee of 1922 on shell-shock cases were receiving effect. A circular issued by the Medical Practitioners' Union on treatment of air raid casualties in hospitals rather than in first-aid posts was before the committee. The committee was informed that in the arrangements in the United Kingdom full use was made of the experience gained in Barcelona during air attacks.

State Control in Medicine

In the debate on the address in the House of Commons on December 5 Dr. Edith Summerskill, after urging the Ministry of Health to plan after the war a medical service which would entirely eliminate private profit from the treatment of disease, and to institute a State medical service, said that during the last three months those who were in contact with medical services had seen a tremendous change. Harley Street and its district were practically emptied. Not only the physicians and surgeons but the patients had gone as well, and perhaps for the first time in their lives the best-paid and wealthiest physicians and surgeons—in their profession they regarded that as meaning the most successful—were being paid by Whitehall. A revolution had also taken place in the hospital service. The medical services had not functioned smoothly, partly because there had not been, fortunately, the anticipated casualties in the first weeks of war. In the hospitals there were surgeons who said that their fingers were getting rusty because they were not able to operate; in some places the hospitals were getting over-staffed. One tragedy which was not fully realized was that of doctors in evacuation areas whose practices had disappeared with the war and who were sadly in need of some kind of relief.

If a very careful examination of the position were made, she believed it would be found that, in spite of these difficulties, for the first time in the medical history of the country we had in being the framework of a State medical service. For the first time in this country there was unified control and State remuneration for doctors. Young doctors in hospitals throughout the country were being paid an adequate salary instead of the £100 or £150 which they would get as house officers. If the State had decided that this was the only way to treat civilian casualties in war time, why not perfect the system and treat civilians in the same way in peace time? She challenged anyone to look at the latest municipal hospitals equipped with the latest scientific apparatus and then to look at the voluntary hospitals struggling along. It was absurd to tolerate the out-patient system. Outside the hospitals the dependants of the workers had no medical service at all, unless they could pay for it, and the middle classes were given what was often an inferior service.

Sir FRANCIS FREMANTLE said that the idea of a national medical service was not new. Dr. Summerskill did not seem to realize that the Poor Law was the first time the idea of a public medical service was brought into existence. It was necessary to link up the medical services, whether personal or institutional, more than was the case at present. We had been working in that direction with effect, but had not yet got to a completed scheme. One way was through the medical officers of health scheme, another was through the insurance scheme, unfortunately introduced as a separate organization. Voluntary hospitals were working together much more in the way of a public utility service. A Government which tried to socialize the medical profession, whether that was right or wrong in theory, would be very sorry. It would undertake an impossible proposition. What could and must be done was to help build up the present scheme, to help it forward in the direction in which it was going now, and guide its development. Dr. Summerskill's suggestion was that under a State system the doctors would be delighted to have a definite income, definite hours of work, and definite holidays. If that were so, then God help the patients, because doctors, like other people, were human. There were good, bad, and indifferent doctors. There were those who would say that they had done their eight hours' work, that their week-end or holiday was due, and that they would make their arrangements and go. If the doctors were under State control they would, as was the case with officials in any walk of life, insist on their rights, duties, and privileges, and would feel that it was the duty of the authorities to provide for the rest. The life-and-death questions of medicine could not be dealt with in that way. That was why they must continue the voluntary arrangements and voluntary control. It would be against human nature and against the facts of the case to socialize the whole of the profession and its institutions.

Dr. ELLIOT said that Lord Nuffield's gift of 1,000,000 ordinary shares in Morris Motors, Ltd., for the co-ordination of hospital finances and policy in the provinces was a great piece of planning. Even in the midst of war they were still able to obtain these princely donations for the purposes which they all desired—namely, to organize the proper relationship of the voluntary hospital to the municipal hospital and the co-ordination of the hospital system as a whole. It would be quite unfair for him, having asked for the collaboration of all sections of the community in the Emergency Medical Service, to impose on the profession some system with which it was not wholly in agreement.

Nutrition in War Time

The debate on the address continued on December 6. Miss ELLEN WILKINSON said the Government should have an intelligent food policy, particularly for the children and the unemployed. In the last war the nation was only beginning its knowledge on protective foods and vitamins. The influenza epidemic at the end of the war followed malnutrition in certain areas and a general lack of protective foods in the last years of the war, which reduced the resistance of the poorer parts of the population. Before the nation got near that position the Government should ensure to the children, to the lower-paid workers, and to the unemployed sufficient supplies of protective foods. It was possible to submit ordinary grade margarine to a process which produced ergosterol and to have vitaminized margarine. The sale of margarine not so treated should be made illegal to protect the lower-paid workers. Children were suffering now in towns where the schools were closed and the milk service temporarily stopped.

Sir GEORGE SCHUSTER remarked that although fats were important to the life of the nation, soap was still made with the full peace-time percentage of fat. Germany had come down to a soap which contained practically no fats at all.

Dr. HADEN GUEST protested against any deterioration in soap. The epidemics in the last war arose not only from bad nutrition but from dirt and filth in large parts of Europe. He criticized the calling of young men to the colours by age groups. Further use should be made of older men, and the Government should consider jumping a period of years and taking a class of older men. He was concerned at the prospect of, say, ten continuous age groups being subjected to war strain and many killed. Could they not build on the experience of past years a scientific review of the military and civilian use of man-power with a view to the human future?

Mr. EDEN said anyone who knew the average battalion of the new armies in the last war and compared the physique of the men then with the physique of the average Territorial battalion to-day must be impressed by the change. For the organization of our human resources the nation had the Department of Scientific and Industrial Research and the Medical Research Council, but despite their help the war would set new problems and further research and co-ordination would be necessary. He could assure Miss Wilkinson that Dr. Elliot and Mr. Colville were in communication with Sir John Orr and other leading authorities to see how good results could be ensured in nutrition during the war. The Government recognized the immense importance of the subject.

Ambulance Trains

Sir ALFRED KNOX inquired on December 7 whether Dr. Elliot knew that thirty-two trains, each with eight officials of the St. John Ambulance Association, at present stood idle. He also asked what the weekly cost of these officials was, and why the train and the personnel could not be assembled quickly in case of an emergency. Dr. ELLIOT answered that the casualty evacuation trains, which, owing to the course the war had taken, had happily not been used to a great extent, hitherto numbered twenty-eight, apart from two in Scotland. They were now being reduced to eighteen. The weekly cost of the orderlies averaged about £26 per train. The mobility of the trains and the need for keeping them and their equipment in constant readiness for immediate service, if required, made it necessary to keep trains and staff continually in commission.

Treatment of Contagious Diseases in Military Areas.—On December 5 Captain ELLISTON asked the Minister of Health whether extended arrangements were being made for the treatment of contagious diseases occurring in the civil population in the neighbourhood of military encampments and munition works. Dr. ELLIOT said that the position was under review, and he proposed shortly to issue a circular to the responsible local authorities on the matter.

Medical Boards: Classification of Examinees.—On December 7 Mr. RHYS DAVIES asked whether doctors who conducted examinations under the Military Service Act were familiar with the training given in the Forces to the men they examined. He asked Mr. Ernest Brown to invite all members of medical boards to witness such training so that they might relate their examinations to what was expected of the men later. Mr. BROWN replied that the classification of men examined by medical boards in the categories specified in the National Service (Armed Forces) (Miscellaneous) Regulations, 1939, was based on medical grounds. It was for the military authorities to determine the kind of service for which men so classified were suitable and to post them accordingly. He thought it unnecessary to adopt the suggestion made by Mr. Davies.

Hospital Visiting Hours.—Mr. DAVID ADAMS said on December 7 that certain municipal and voluntary hospitals had instituted alterations in their visiting days and hours, whereby for greater safety in case of air raids the number of visitors would be substantially reduced. He asked Dr. Elliot whether he proposed to recommend similar action throughout the country. Dr. ELLIOT replied that this was not a matter upon which he had specific information or upon which he would feel it desirable to make a general recommendation to the exclusion of the discretion of the authorities concerned.

Dental Treatment for Evacuated Persons.—Dr. ELLIOT said on December 7 that dental treatment fell within the scope of the health services which local authorities in receiving areas had been urged to extend to members of the evacuated priority classes. In addition, the Board of Education had asked local education authorities in a recent circular to make special arrangements, where necessary, for emergency dental treatment, including extraction, for school children.

Notes in Brief

On December 5 Mr. HORE-BELISHA informed Sir Irving Albery that adequate arrangements had been made to provide a physiotherapy department in military hospitals and in convalescent homes for wounded.

One Act covered by the Postponement of Enactments (Miscellaneous Provisions) Bill is the House-to-house Collections Act, 1939.

Medical News

Sir Walter Langdon-Brown has been appointed President of the British Social Hygiene Council in succession to the Right Hon. L. S. Amery, M.P.

The House of the British Medical Association, including the Library, will be closed for the Christmas holiday from 5 p.m. on Friday, December 22, to 9 a.m. on Wednesday, December 27.

We are asked to announce that a child guidance clinic, providing a limited service, is available at Guy's Hospital (London Bridge, S.E.) for the hospital's area.

Plans have been made for the third Pan-Arabian Congress and the twelfth Annual Congress of the Egyptian Medical Association to be held simultaneously at Jedda from January 16 to 21 during the period of the Mussulman pilgrimage. The fee is one Egyptian pound. Further information can be obtained from Professor M. Khabet Bey, Kasr El-Ani Post Office, Cairo.

The Pan-American Congress of Rural Hygiene organized by the Government of Mexico has been postponed indefinitely; also the International Congress of Oto-rhino-laryngology, which was to have been held in Amsterdam next year.

The Hospital of the Rockefeller Institute for Medical Research, New York, announces that the following diseases are under investigation for the years 1939–40: nephritis, heart disease, rheumatic fever, measles, and acute respiratory diseases. Suitable patients may be referred to the hospital by physicians and others willing to co-operate. No charges are made for treatment, board, room, or any other services.

The Lord Mayor of London presided over the annual meeting of the Royal Surgical Aid Society on December 4. He said that 27,378 patients were dealt with last year and 36,561 appliances were supplied. The work deserved sympathy, for it not only prevented much suffering but enabled those relieved to become self-supporting. The Dean of Manchester (the Very Rev. Garfield Williams, M.B.) said that he could imagine no more discriminating charity than this, and Lord Justice Du Parcq also spoke in its support. Mr. B. Whitchurch Howell acknowledged a vote of thanks to the surgeons of the society.

The State Department of Health for Illinois announces in the *Journal of the American Medical Association* that during the current pneumonic season both serum and sulphapyridine will be distributed free to doctors.

The issue of *Le Bulletin Médical* for November 4, which is devoted to neuropsychiatry, contains the proceedings of the International Congress of Neurology held at Copenhagen from August 21 to 26, 1939.

The Drugs Branch of the Home Office has moved to Cleland House, Page Street, Westminster, S.W.1.

Dr. Alexis Carrel has joined the staff of the French Ministry of Public Health for the duration of the war.

According to the statistical office of the Reich, Germany had 4,745 hospitals with 630,000 beds in 1937.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

In England and Wales an increase was recorded in the incidence of the commoner notifiable diseases, with the single exception of pneumonia (primary and influenzal), but the diseases for which comparable figures are available were less prevalent than in the corresponding week last year. Certain less common but serious notifiable diseases—for example, cerebrospinal fever, the enteric fevers, and acute poliomyelitis —all showed slight decreases compared with last week, and, cerebrospinal fever excepted, with the corresponding week last year. In London notifications of diphtheria were considerably higher, of scarlet fever unchanged, and of measles and whooping-cough somewhat fewer. As mentioned in these columns previously, the very low incidence in London of diphtheria and scarlet fever compared with previous years can only be attributed to the effects of the evacuation of a large proportion of non-immunes, but it is not justifiable to conclude that the somewhat lower incidence of these diseases in England and Wales as a whole is due to the abnormal distribution of these individuals, although this may well prove to be the case. The effect of evacuation on the London figures is even more strikingly exemplified by the notifications of dysentery; although the disease is almost as prevalent in the whole country as it was last year, no case was notified in London during the present week and only one in the previous week. Dysentery was more prevalent, absolutely as well as relatively, in Scotland than in England and Wales a few weeks ago, due in large part to the occurrence of an epidemic in Edinburgh. Of the 28 cases recorded in Scotland during the week, 11 were in this city; in the previous week the figures were 39 and 16 respectively. The disease was mild and appears to have had no effect on the mortality from enteritis and diarrhoeal diseases in children under 2 years.

Notifications of whooping-cough were slightly and of measles much in excess of those recorded in the previous week. At present whooping-cough is fairly evenly distributed among urban and rural areas in England and Wales; only seven administrative counties are free from it—namely, Cambridge, Isle of Ely, Isle of Wight, Hunts, Rutland, Westmorland, and Anglesey (Wales), compared with ten counties free from measles—namely, Berks, City of York, Hereford, Isle of Wight, Norfolk, Rutland, Suffolk West, and the Welsh counties of Cardigan, Montgomery, and Radnor. Considerable differences were encountered in the comparative incidence of whooping-cough and measles; in London 32 against 6 and in Birmingham 40 against 4 respectively, while in Liverpool and Manchester measles were low and the differences slight. The bulk of the measles cases in each county occurred in the urban centres: Cumberland 183 (Workington M.B. 84); Devon 137 (Okehampton M.B. 42); Lancaster 185 (Blackpool C.B. 41, Great Harwood M.B. 35, Lancaster M.B. 23); Salop 103 (Newport 43, Whitchurch 20); Warwick 102 (Leamington M.B. 46). Anomalous findings are not infrequent. Thus, in Berks there were 24 cases of whooping-cough and none of measles, and in the adjacent county of Bucks there were 79 cases of measles and only 5 of whooping-cough; in the West Riding of Yorks there were 82 cases of whooping-cough against 59 of measles, and in the East Riding the corresponding figures were 69 and 6 respectively.

No. 47

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended November 25, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	27	2	6	3	2	19	6	11	2	—
Deaths		—	2				1	1		
Diphtheria	1,074	38	229	61	42	1,535	181	272	54	30
Deaths	27	—	11	4	2	31	4	6	5	—
Dysentery	70	—	28	—	—	73	7	31	—	—
Deaths			1	—	—			—	—	—
Encephalitis lethargica, acute	1	—	1	—	—	3	—	—	—	—
Deaths		1	—				2	1		
Enteric (typhoid and paratyphoid) fever	19	1	1	6	1	21	9	1	10	1
Deaths	—	—	—	1	—	1	—	—	—	—
Erysipelas			77	5	8			79	4	4
Deaths		—	1				2	1		
Infective enteritis or diarrhoea under 2 years										
Deaths	24	3	14	4	1	37	11	8	6	1
Measles	2,011	6	12				21	14		
Deaths	—	—	—	1	2	3	—	—	—	—
Ophthalmia neonatorum	53	3	22		1	87	10	38		—
Deaths										
Pneumonia, influenzal*	485	26	13	1	16	659	71	7	1	13
Deaths (from influenza)	26	4	1	1	2	28	4	5	1	5
Pneumonia, primary			141	8				365	7	
Deaths		6		11	10		13		15	6
Polio-encephalitis, acute	3	—				3	3			
Deaths		—					—			
Poliomyelitis, acute	12	—	—	1	—	39	7	3	—	—
Deaths		—	—				—	—		
Puerperal fever	4	4	8	3	—	5	5	19	2	—
Deaths		—					1†			
Puerperal pyrexia	158	6	15		2	150	17	19		—
Deaths										
Relapsing fever	—	—			—	1	—			—
Deaths									—	
Scarlet fever	1,383	34	216	66	116	1,969	175	324	62	76
Deaths	3	—	—	—	—	1	—	2	1	—
Small-pox	—	—	—	—	—	3	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,414	32	32		2		169	298		15
Deaths	2	—	—	—	—	7	1	5	—	—
Deaths (0-1 year)	269	25	59	23	15	291	59	68	26	18
Infant mortality rate (per 1,000 live births)						48	48			
Deaths (excluding stillbirths)	4,406	668	618	200	121	4,291	824	609	169	151
Annual death rate (per 1,000 persons living)			12.5	13.4	10.6	10.5	10.5	12.4	11.4	13.4
Live births	6,367	812	806	351	252	5,789	1,145	809	321	201
Annual rate per 1,000 persons living			16.3	23.6	22.1	14.2	14.6	16.5	21.7	17.8
Stillbirths	250	23	40			256	38			
Rate per 1,000 total births (including stillborn)			47			42	32			

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* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Death from puerperal sepsis.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Erythema of Eyelids

Dr. W. A. MUIR writes: A girl of 18 is subject to redness of eyelids, especially after spending a day out in the open. She has been subject to this for some years. General health is good. Ung. hyd. ox. flav. and optrex have been tried without much success. Can any reader make suggestions for treatment?

Chronic Muco-purulent Otorrhoea

Dr. F. C. COLLINSON (Rotherham) writes: I wonder if any of your readers could help me with suggestions in the treatment of a case of middle otorrhoea, thick muco-purulent discharge going on for more than a year, large perforation in each drum; the discharge is loaded with diphtheria bacilli of a non-virulent character. The patient is very fit now, though he had an artificial pneumothorax and was in a sanatorium for a long time. The ear condition is undoubtedly due to an attack of measles he had when a child. The treatment has been keeping the ears as dry as possible, douching with antiseptics, electric treatment, and diphtheria antitoxin. Up to now no improvement has taken place so far as discharge is concerned, and he is certainly somewhat more deaf.

Muscular Twitchings

Dr. E. J. BOWMER (Liverpool) writes in reply to " H." (November 25, p. 1072), who asked for suggested treatment to control general twitching of the muscles: I have had several cases of generalized twitching associated with tremors which appeared to be of the Parkinsonian type: unsteady gait, " pill-rolling " of fingers, irregular movements of arms, and twitching of the facial muscles. While there is little hope of arresting the progress of the disease in these senile cases, I have found that they respond well to administration of genoscopolamine granules, one to two t.d.s., p.c. The preparation is the amido-oxide of scopolamine prepared by Lab. Amido.

A Historic X-ray Apparatus

Dr. GEOFFREY A. HOFFMAN writes from Cranham, Gloucester: With reference to Dr. R. T. Gunther's inquiry under the above heading (November 25, p. 1072), I am doubtful of the correctness of Captain E. G. Spencer-Churchill's statement. On Professor Roentgen's discoveries of *x* rays in 1896 my uncle, the late Dr. J. Hall-Edwards of Birmingham, at once became keenly interested in the subject. In February of that year he produced the first radiograph taken outside London and the first radiograph of the spine. The first operation in this country as a direct outcome of the application of the rays was made from one of his negatives. I understand that Dr. Hall-Edwards equipped a portable apparatus for use in warfare, and, in addition, on the outbreak of the Boer War in South Africa he became attached to the Imperial Yeomanry Hospital as surgeon radiographer under the leadership of Sir Alfred Fripp. In an article written by himself he states that he dealt with 120 cases in the hospital at Deelfontein in the first five months alone, and gives an interesting account of it.

Income Tax

New Partnership—Old Debts

" PERU " refers to a reply in our issue of April 29 last, and inquires whether he has been right in acquiescing in the bringing into the firm's cash receipts of amounts paid on old accounts—that is, for services rendered before the present partnership came into being.

⁂ The reply quoted referred to different circumstances. In that case the former proprietor had retired, his professional earnings had ceased, and there was no question of his being assessable for subsequent years as a practitioner. In " Peru's " case he is still chargeable in respect of professional earnings. None the less he could have declined to have the old receipts brought into the new firm's accounts, but in that case the inspector of taxes would have rightly claimed that the cash receipts were not a fair index of the gross earnings of the practice, and would have insisted on the basis of bookings less an allowance for bad debts. Rather than become involved in the inconveniences of that method of computation most practitioners prefer to adhere to the cash receipts basis, even with the necessary corollary—that is, that *all* receipts be brought in, whatever their destination.

Honorary Appointment Expenses

" R. H." was, before the war, doing honorary work for a London hospital which entailed travelling once a week between London and the provincial town where he lives. Can he deduct the expenses so incurred?

⁂ If during the period in question " R. H." was in general practice we think that the Inland Revenue authorities would not object to the merging of the travelling expenses in those of the practice—as would certainly be done if " R. H." had been receiving a small fee for his services. But it is clear that he cannot deduct those expenses from other earnings—for example, from his pay, etc., as an officer in the R.A.M.C.

LETTERS, NOTES, ETC.

Treatment of Angina and Hyperpiesia

Dr. H. W. HALES (Bedfordshire), with reference to the leading article in our issue of November 4 (p. 915) on the drug treatment of angina and hyperpiesia, writes: I have had no small measure of success in both angina and hyperpiesia with a combination of colonic lavage with potassium permanganate and a diet reduced for some days to water and then to oranges and grapefruit only for some weeks. I do not know whether the results may be attributed to the potassium or the manganese ion, but it is certainly obtained when this salt is used for colonic lavage and not obtained when other salts are employed.

Calendars and Diaries

The high quality of the calendars and diaries produced by John Walker and Co., Ltd. (5 and 6, Warwick Lane, E.C.4) remains unchanged despite war-time conditions. The bindings of the samples sent to us display the same attractiveness as in former years, and the prices of the diaries range from 1s. upwards.

The Dental Mnaufacturing Company Ltd. (Brock House, 97, Great Portland Street, W.1) have issued their diary of appointments for 1940. It contains, as usual, space for half-hourly appointments, a week's appointments being visible at an opening, and much information of interest to dental practitioners. The detachable finger-indexed address book must be a great convenience to those using the diary; its price (plain edition) is 6s. 6d., postage 6d. extra.

Chocolates for Christmas

Samples of Messrs. Cadbury's well-known goods have been sent to us, and we are informed that in addition to making chocolate for the men and women in the Forces and for Civil Defence workers, chocolate boxes for Christmas presents will be available as usual. Prices of the gift boxes and caskets range from 6d. to 40s., and there are supplies of the varieties obtainable all the year round.

Corrigendum

Dr. W. NEWTON CHALMERS (Kirkcudbright) points out that the legend under Fig. 1 in the article by Mr. Philip Wiles on " Fractures of the Neck of the Femur " (*Journal*, November 4, p. 920) is incorrect. It should read, " Adduction fracture with upward displacement and *external* rotation "—not " *internal* rotation."

BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 23 1939

HYPERTENSION

A CONSIDERATION OF ITS SURGICAL TREATMENT*

BY

WINCHELL McK. CRAIG, M.D.

Section on Neurosurgery, the Mayo Clinic, Rochester, Minnesota

Richard Bright, more than a hundred years ago, after his memorable clinical and pathological studies, reasoned that the production of hypertension was due to an altered quality of the blood, which in turn caused hypertrophy of the heart together with the primary disease in the kidney. Thirty years later Gull expressed the opinion that the underlying cause of hypertension was widespread vascular lesions. Since that time much clinical and experimental evidence has been collected which lends support to both hypotheses. Allbutt and others have advanced clinical conceptions in favour of Gull's view, which, in general, has been accepted in the last twenty-five years by students of the problem of essential hypertension. However, a few investigators—for example, Volhard and Fahr—have expressed the belief that the primary cause of essential hypertension is renal dysfunction. The recent experimental work by Goldblatt lends support to such a hypothesis.

The treatment of hypertension by operation on the sympathetic nervous system has stimulated a new interest in the subject. Fifteen per cent. of all adults are assumed to have hypertension and 23 per cent. of all deaths at an age greater than 50 years are supposed to be directly attributable to this disease. Cardiovascular-renal disease, of which hypertension is an important factor, causes more than four times as many deaths as cancer, and hypertension apparently accounts for more deaths each year than does either cancer or pneumonia. Hypertension is therefore one of the most common and serious conditions that come under the care of physicians, and any therapeutic innovation which may lessen the mortality should be carefully examined. Arterial hypertension is considered to be present when the systolic blood pressure of adults persists at 150 mm. Hg or over. It is probably true that the blood pressure does not increase normally after maturity, and the blood pressure of infants and children is significantly lower than that of adults.

The treatment of hypertension has been complicated by the erroneous opinions that the elevation of blood pressure is not a disease but a symptom, and that the elevation of blood pressure in essential hypertension is beneficial and necessary for normal functioning of organs such as the kidneys. Study of patients whose blood pressure has been reduced to normal by operation at the Mayo Clinic indicates that the kidneys function as efficiently as, or even better than, they did when the pressure was high. In our experience there is no basis for the belief that patients who have essential hypertension feel unwell when the blood pressure is reduced, and we are convinced that it is extremely desirable to lower the blood pressure in all cases in which it is significantly high.

Secondary Hypertension

Hypertension may be divided into two main groups—secondary, and essential or primary hypertension. Secondary hypertension results from such lesions as pyelonephritis, glomerulitis, hydronephrosis, coarctation of the aorta, and tumours of the suprarenal glands. Primary renal lesions should be excluded by careful study, particularly by intravenous urography, because removal of a diseased kidney may cause the blood pressure to return to normal.

COARCTATION OF THE AORTA

This condition should always be suspected in young persons who have hypertension. This congenital anomaly is characterized usually by normal or low blood pressure in the lower extremities (normally the blood pressure in the lower extremities is significantly higher than it is in the arms), palpable arterial pulsations or bruit in the intrascapular region, and diminution in strength of pulsations in the arteries of the lower extremities. Roentgenologic examination of the thorax may show absence or deformity of the aortic shadow and erosion of the ribs attributable to development of the large collateral arteries.

TUMOURS OF SUPRARENAL GLAND

Tumours of the suprarenal gland that cause hypertension are comparatively rare. Those of the medulla or medulla-like tissue usually give rise to paroxysms of hypertension, which manifest themselves clinically as episodes of epigastric or substernal pain, pallor, palpitation, tachycardia, and marked elevation of the blood pressure. Since the medullary portion of the suprarenal gland is derived from the embryonic sympathetic nervous system, tumours which involve the medullary portion of the suprarenal gland might be expected to give rise, among other things, to an excessive supply of adrenaline. The most important tumours of the medullary portion of the suprarenal gland are the paragangliomas, which are benign in character, and the syndrome caused by them is characterized clinically by attacks of paroxysmal hypertension.

Five cases of tumour of the medullary portion of the suprarenal gland have been reported in the literature by Donzelot, Robert, Orth, Labbé, Vaquez, Oberling, and Jung. The sixth case, the first in which cure was brought about by operation, was reported by C. H. Mayo (1927). The seventh case, that of Shipley and Pincoffs, was operated on successfully and a large amount of adrenaline was demonstrated in the tumour by biological assay. Cases were subsequently reported by

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Potter, Kalk, and Laubry and Bernal. Bauer, in Vienna, reported a case in which the suprarenal gland was normal, but in the same case Leriche found a paraganglioma the size of a walnut (about 3 cm. in diameter) between the vertebral column and the aorta.

No satisfactory explanation for the paroxysmal character of the hypertension in the cases of paraganglioma has been made. Periodic haemorrhages into the centre of the tumour may force out the adrenaline. Unusual physical exertion such as bending may express adrenaline from the tumour. Emotional reaction such as fear or anxiety, which normally stimulates an increased flow of adrenaline, may in the presence of a paraganglioma provoke an abnormally large discharge of that substance. The complete absence of signs of arteriolosclerosis in cases of hypertension caused by paraganglioma is of particular interest as being evidence against the conception that adrenaline plays a part in cases of arteriolosclerosis and essential hypertension. Kelly, Piper, Wilder, and Walters (1936) reported a case of suprarenal tumour and paroxysmal hypertension.

Hypertension associated with tumours of the suprarenal cortex is not paroxysmal in type. Obesity, hirsutism, deep voice, and amenorrhoea may be associated changes. Ordinarily the potassium in the blood is low and the sodium is high. Binger and Craig (1938) reported a case of atypical suprarenal tumour.

RENAL LESIONS

One should always suspect the presence of tumours of the suprarenal glands as well as primary renal lesions in cases of hypertension. Barker and Walters (1938) reported a case of hypertension in which the blood pressure became normal after surgical removal of a renal lesion. This was a case of unilateral chronic atrophic pyelonephritis in which hypertension appeared after the chronic pyelonephritis was well developed and the kidney had become atrophic.

The incidental association of chronic pyelonephritis and hypertension is suggested by the experimental work of Goldblatt (1937), who showed that hypertension could be produced by partial obstruction of the flow of blood through the renal artery. The idea that in some cases hypertension may be caused primarily by renal disease, especially if the arterial blood supply of the kidneys has been impaired, has been revived. Complete sympathectomy performed on dogs does not influence the hypertension produced by Goldblatt's technique. An ischaemic kidney of one dog transplanted to the neck of a second dog produced hypertension in the latter. The hypothesis has been advanced that this renal type of hypertension is produced by liberation of some pressor substance from the kidney. Longcope (1937) found definite hypertension in 50 per cent. of twenty-two cases of pyelonephritis. Butler (1937) reported six cases of chronic pyelonephritis associated with hypertension among children. In two cases in which the pyelonephritis was unilateral, nephrectomy was followed by normal blood pressure.

The exact relation of chronic pyelonephritis to hypertension is still debatable. In many cases of chronic pyelonephritis the blood pressures are normal. However, the degree and type of injury to the renal parenchyma may vary greatly in cases of pyelonephritis. It seems reasonable to suppose that in Barker and Walters's case the patient had the capacity for developing hypertension in the first place and that the degree and type of renal damage which would produce it then developed. There was certainly enough evidence of arterial disease in the renal cortex to produce definite obstruction of the renal circulation. One must consider that the hypothetical pressor substance produced by a kidney rendered ischaemic by Goldblatt's technique might also be produced by some other type of renal injury such as occurs in certain cases of chronic pyelonephritis.

Secondary hypertension, then, is the elevation of the blood pressure that can be attributed to some associated lesion or other condition of the body, whereas essential hypertension is an elevation of the blood pressure in which the cause or aetiological factor is not known.

Essential or Primary Hypertension

In regard to essential hypertension much is known about the mechanism of elevation of the blood pressure. Three factors are responsible for maintaining normal blood pressure, and derangement of any one of these may cause a change in the blood pressure. The cardiac output, the volume or viscosity of the blood, and the resistance offered to the flow of the blood through the peripheral parts of the arterial system determine the blood pressure. It has been proved that cardiac output or viscosity of the blood is not altered in cases of essential hypertension, but that the calibre of the peripheral vessels is decreased. The situation is comparable to a garden hose at the end of which a nozzle is attached. If one decreases the diameter of the opening of the nozzle pressure within the hose increases, as is shown by the greater distance to which the stream is thrown. The decrease in diameter of the peripheral vessels is attributable to (1) a condition inherent in the arterioles, and (2) an abnormal reaction of the arterioles to vasomotor stimuli. Wide fluctuations of blood pressure would be indicative of an abnormal response of arterioles to vasomotor stimuli. A high sustained blood pressure with little fluctuation would be indicative of an inherent or automatic constriction of the arterioles.

There is a large hereditary factor in essential hypertension, as revealed by Ayman (1934), who found that in families in which both parents had absolutely normal blood pressure the incidence of elevated blood pressure among the children was only 3 per cent. In families in which one parent had hypertension the incidence rose to 28 per cent., and in families in which both parents had arterial hypertension the incidence was 45 per cent. Hines has shown that a family history of hypertensive cardiovascular disease is five times more frequent among individuals who have hypertension or who are hyperreactive to a standard stimulus (immersion of the hand in ice-water) than it is among individuals who react normally to the test. The exact inherent quality responsible for this is not known, but probably a hyperreacting sympathetic nervous system responds abnormally and produces unusual vasoconstriction as a result of various emotional stresses and strains.

Hypertension that has been produced experimentally in animals has some characteristics of essential hypertension in man. Goldblatt (1937) has produced hypertension by diminishing the flow of blood to the kidneys of dogs by means of clamps applied to the renal arteries. The hypertension of dogs closely resembles that of man, but complete evidence that it is the exact counterpart is entirely lacking. Those who have accepted the identity of Goldblatt's hypertension in dogs and essential hypertension in man believe that both are due to some chemical or hormonal substance. Up to this time there is no concrete evidence that essential hypertension is due to an abnormal pressor substance, and, reducing the problem of the aetiology of essential hypertension in man to its simplest form in the light of our very inadequate knowledge of the subject, heredity and the stresses and strains of life seem to be the most important factors.

Essential hypertension has been classified into four groups by Keith and Wagener: (1) slight to moderate increase in the blood pressure, which ordinarily becomes normal as a result of rest, and mild sclerosis of the retinal arteries, usually without symptoms; (2) moderate to severe hypertension, moderate sclerosis of the retinal arteries, and occasionally venous thrombosis; clinical symptoms are present or absent; (3) moderately severe hypertension and angiospastic retinitis, almost always associated with clinical symptoms of hypertension; and (4) severe hypertension, angiospastic retinitis, oedema of the optic disks, and, always, clinical manifestations of hypertension.

This grouping does not indicate the degree of hypertension, although the blood pressure is often higher in one group than in the group which numerically precedes it. The hypertension of any patient may progress from group to group until group 4 is reached. Mortality among patients who have hypertension groups 1 and 2 is 30 to 42 per cent. respectively in four years. Mortality among patients who have hypertension group 3 is 78 per cent. in four years; and in group 4, 98 per cent. (Keith). This high mortality should be noted carefully by those who are inclined to consider that hypertension is not ordinarily a serious disease. Malignant hypertension and essential hypertension are not separate conditions, for malignant hypertension is a type of essential hypertension. The term "malignant" is used loosely to designate severe forms of hypertension.

Medical Treatment of Essential Hypertension

On the whole, medical treatment of hypertension has been unsatisfactory. It has been stated that a great many preparations reduce blood pressure in cases of essential hypertension; however, on close examination it is evident that in most of these instances diminution of the blood pressure supposedly resulting from a specific remedy occurred only as a part of the usual wide fluctuations of blood pressure that are characteristic of essential hypertension. Such drugs as are available for the reduction of blood pressure usually possess unpleasant side effects or short action. The specific need in the medical treatment of hypertension is for a drug which will produce vasodilatation for a comparatively long time (three to six hours) and which does not produce harmful or unpleasant side effects. Sodium nitrite, sodium nitrate, purine derivatives—for example, theobromine and theophylline—iodides, and tissue extracts—for example, padutin (a preparation obtained from the pancreas), liver extract, and adenosin—are of little or no value in the treatment of hypertension. Occasionally when hypertension develops during the menopause it may be reduced by administration of theelin or progynon. However, it is inadvisable to treat such patients with these hormones for long periods unless a definite reduction of the blood pressure rather promptly follows adequate dosage.

Of all the drugs commonly used in the treatment of hypertension the sedatives are the best, and of them phenobarbital is as good as any. The ideal sedative is one that reduces nervousness and irritability but does not interfere with the essential cerebral activities. Ordinarily, 3/4 grain to 1½ grains (0.05 to 0.1 gramme) of phenobarbital three times a day is advisable.

Comparatively recently a new drug, potassium sulphocyanate, has been introduced for the treatment of essential hypertension. Its action is uncertain, but it is supposed to produce peripheral vasodilatation. Barker has shown that the blood-pressure in about 50 per cent. of hypertensive patients is reduced by careful treatment with potassium sulphocyanate. The amount of this drug that is administered orally should be determined by frequent calculations of the concentration of cyanates in the blood. The concentration in the serum should range between 8 and 12 mg. in each 100 c.cm. of blood. As little as 3 grains (0.2 gramme) or as much as 12 grains (0.8 gramme) of potassium sulphocyanate must be administered each day to cause this concentration in the blood. Barker has described a method for determination of cyanates in the blood; this has been modified by Griffith and Lindauer. Such symptoms as headache, insomnia, and nervousness may be relieved, according to Barker, when the blood pressure is reduced. Fatigue, macrocytic anaemia, and enlargement of the thyroid gland may occur even if administration of the drug is well controlled. If concentration in the blood is too great, lethargy, mental confusion, weakness, difficulty of speech, cutaneous lesions, and collapse may occur.

Experience at the Mayo Clinic with the use of potassium sulphocyanate in the treatment of hypertension has been somewhat limited, but relief of symptoms such as headache is often striking. There is definite reduction of blood pressure in some cases. It is advisable to continue well-controlled treatment for about three months before a decision is made that the treatment is not of value, as blood pressure may decrease slowly in instances in which it is reduced at all. Potassium sulphocyanate should never be administered for a long period unless the amount given is based on studies of concentration of cyanates in the blood. It is imperative for the physician prescribing sulphocyanates to familiarize himself with the literature on the subject before treating the patient with them. Not only does the administration of potassium sulphocyanate help patients who have not had an operation for the condition, but also in some of the cases in which little or no benefit has been obtained from operation its use has been followed by very gratifying results. In some cases in which potassium sulphocyanate was given before operation without benefit the administration of the drug after extensive sympathectomy has produced marked lowering of the blood pressure.

Rest and the reduction of nervous stresses and strains are important in the treatment of many patients who have essential hypertension. In general, it is advisable for such patients to obtain nine hours of rest in bed at night, to lie down for an hour or an hour and a half in the middle of the day, to take vacations frequently, to acquire a calm philosophic outlook on life, and to avoid nervous stresses and strains. Young individuals who follow strenuous occupations may well consider it advisable to change to an occupation that is more restful.

Many diets have been advised in the treatment of hypertension, but there is little evidence that diet influences blood pressure. We do not feel it advisable to restrict protein or salt in diets of hypertensive patients. Individuals who are over weight should reduce, for obesity throws an additional strain on the heart by increasing the work that it must do and as a result of deposition of fat in heart muscle and around the organ. Restriction of intake of alcohol and coffee is not imperative unless they serve as stimulants. They do not themselves increase the blood pressure appreciably. Smoking increases greatly the blood pressure of many patients who have hypertension, and if this can be demonstrated by having the patient smoke after his blood pressure has reached a basal level it is well to consider sharp restriction or complete elimination of smoking.

Indications for and Results of Surgical Treatment of Essential Hypertension

The surgical treatment of hypertension is based chiefly on the assumption that the increased arteriolar tone can be released by operation on the sympathetic nervous system, thus lowering the blood pressure. Arteriolar tone can be diminished by sympathectomy, as has been established clinically in the treatment of Raynaud's disease and thrombo-angiitis obliterans. Extensive sympathectomy produces two other effects that may be of value in the treatment of essential hypertension (Fig. 1)—namely, an increase in the blood supply to the kidneys and prevention or diminution of spontaneous release of adrenaline from the suprarenal glands. If the type of hypertension experimentally produced in animals by Goldblatt is comparable to essential hypertension in man, extensive sympathectomy is designed to destroy the sympathetic innervation of the kidneys and thus increase the blood supply to them. We believe that sympathetic denervation of the suprarenal glands, which is accomplished as part of the procedure of extensive sympathectomy as performed at the Mayo Clinic (Fig. 2), is probably of value only because it diminishes or prevents episodes of marked release of adrenaline from the suprarenal glands. Whether extensive sympathectomy is more valuable in the treatment of essential hypertension than partial sympathectomy, such as supradiaphragmatic splanchnicectomy (Peet) or coeliectomy (Crile), I do not know, but extensive sympathectomy is a more logical procedure, for it relieves sympathetic control of the kidneys and the suprarenal glands as well as that of the intra-abdominal regions and of a large portion of the lower extremities.

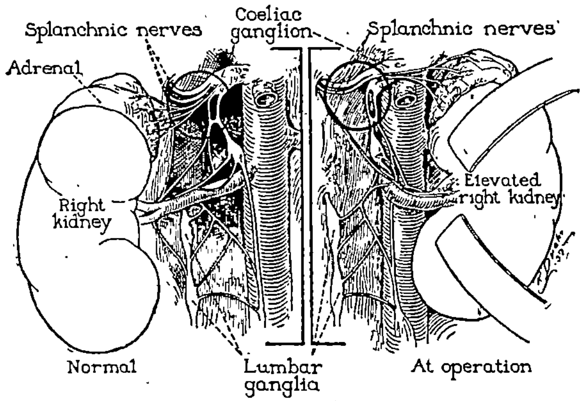

FIG. 1.—Extensive subdiaphragmatic sympathectomy in which the major, minor, and lesser splanchnic nerves with a portion of the coeliac ganglion and upper lumbar sympathetic trunk are removed.

From the discussion stimulated by the papers presented at the last International Surgical Congress in Brussels in a symposium on the surgical treatment of arterial hypertension it was evident that the surgical treatment of hypertension has proved of value in most clinics. Three factors in the causation of essential hypertension were stressed—namely, suprarenal, renal, and vasomotor. Hereditary, constitutional, and psychic factors, as well as the factors linked with certain hyperexcitable conditions of the sympathetic nervous system, were also discussed.

The futility of carrying out extensive sympathectomy in cases of hypertension in which there is irreparable damage to the cardiovascular mechanism is apparent. Nor should operation be considered in a case in which a mild and slowly progressive disease is amenable to medical treatment. Operation seems most efficacious in the definite vasospastic type of hypertension, in which sharp and brisk elevations in blood pressure occur when the hands are immersed in cold water, and in cases in which a marked fall in blood pressure is produced when pentothal sodium, sodium amytal, or a nitrite is administered. As an average rule the patient must be less than 50 years of age and the hypertension must be classed as of group 2 or 3.

One group of patients whose records seem discouraging are symptomatically relieved, especially of headaches. In one such case the pre-operative studies indicated little decrease in blood pressure and the post-operative blood-pressure readings were disappointing, but the patient was completely free from a disabling headache for eighteen months following operation.

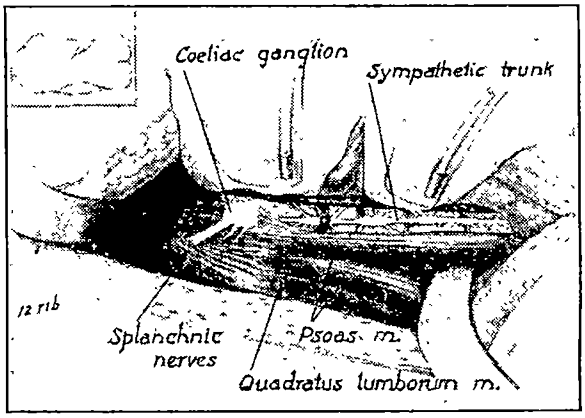

FIG. 2.—Resection of a portion of the twelfth rib and exposure of splanchnic nerves, coeliac ganglion, and lumbar sympathetic trunk ; *inset*, incision employed.

The contraindications to extensive sympathectomy are congestive heart failure, angina pectoris, marked renal insufficiency, and advanced arteriosclerosis. The operative mortality is negligible in properly selected cases, and, although some of the patients eventually die of the disease, operation seems neither to have hastened nor to have delayed death. Experience with 237 patients who have undergone extensive sympathectomy without an operative death has demonstrated that the operation, as performed at the Mayo Clinic after careful examination and selection, has a definite place in the treatment of essential hypertension. The symptomatic relief following operation has exceeded the effect on blood pressure. The proportion of patients relieved of headache when the effects of the operation on the blood pressure are recorded as good, fair, or poor was as follows: 100, 80, and 76 per cent. respectively. Nervousness was relieved after operation when the effect of operation on the blood pressure was recorded as good, fair, or poor, in 80, 66, and 67 per cent. of cases respectively. The proportion of patients relieved of non-anginal pain in the left side of the thorax after operation when the effects of operation on the blood pressure were recorded as good, fair, or poor was 90, 75, and 60 per cent. respectively. Fatigue on exertion was relieved after operation in 41, 44, and 50 per cent. when the effect of operation on the blood pressure was recorded as good, fair, or poor respectively; while dyspnoea on exertion was relieved in 50, 46, and 48 per cent. These figures bear out in a striking manner isolated clinical observations that frequently patients are relieved of such distressing symptoms as headache, in spite of the fact that reduction of their blood pressure does not seem apparent. The results of the operation for hypertension in the 237 cases were classed as follows: failure in 20 per cent., temporary relief in 28 per cent., fair results in 28 per cent., and good results in 24 per cent.

The women obtained good or fair results from operation in a slightly higher proportion of cases than the men, the percentages being 55 and 48 respectively. The duration of the hypertension before operation did not influence significantly the effect of operation. In contrast to previous conceptions regarding the influence of age, this factor did not seem to influence the good or fair results, although patients in the third decade of life received a slightly smaller percentage of good or fair results than did those in the fourth, fifth, and sixth decades.

Allen, Lundy, and Adson (1936) reported a case in which operation was followed by lowered blood pressure until pregnancy occurred. After interruption of the pregnancy the blood pressure decreased to the previous level. The inference to be drawn from this case is that hypertension can be caused from toxaemias and can act, with regard to sympathectomy, in a manner similar to Goldblatt's experimental animals. There seems, therefore, to be some difference in the mechanism of production of essential hypertension and of the hypertension that occurs as a part of toxaemia of pregnancy. Allen, Lundy, and Adson concluded that until more was known about the subject it was probably desirable for patients operated on for hypertension to avoid pregnancy if possible; if such patients become pregnant careful observation of the blood pressure should be made, and if there is any evidence of an increase the pregnancy should be terminated.

Since this case was reported several women who have had extensive sympathectomy for hypertension have completed their pregnancies successfully without any change in blood pressure, and therefore we have come to the conclusion that if a patient who has had a sympathectomy for hypertension becomes pregnant the pregnancy should be allowed to continue until toxaemia and increasing blood pressure indicate an impending danger.

In analysing the results of surgical treatment by extensive sympathectomy it is evident that fixed rules with regard to the selection of cases for operation are difficult to formulate. In general it can be said that patients probably will obtain good results from operation when the diastolic blood pressure decreases pre-operatively to less than 110 mm. Hg as a result of rest, administration of sodium amytal, and injection of pentothal sodium, and when sclerosis of the retinal arteries is absent or slight. Also, the probabilities that a patient will secure good results from operation are small in the presence of advanced sclerosis of the retinal arteries, when the maximal diastolic blood pressure exceeds 150 mm. Hg, or when the liastolic pressure does not decrease to less than 120 mm. s a result of rest, intravenous injection of pentothal odium, or administration of sodium amytal. It has been emonstrated that operation can be carried out safely. he operation does not disable, and it often produces markable effects on blood pressure.

Comment and Summary

n the treatment of hypertension, primary or essential ertension, which exists in 85 per cent. of cases, and ndary hypertension, which is present in 15 per cent. cases, must be considered. Secondary hypertension lts from such lesions as pyelonephritis, glomerulitis, onephrosis, coarctation of the aorta, and tumour of suprarenal glands. The surgical treatment of essential rtension is based on the assumption that increased arteriolar tone can be reduced by operation on the sympathetic nervous system, and thus lowering of the blood pressure is effected. Two other effects of surgical treatment that may be of value in the treatment of essential hypertension consist of an increase in the blood supply to the kidneys and prevention or diminution of the flow of adrenaline from the suprarenal glands. In analysing the surgical results it has been found that patients who suffer from a high fixed blood pressure associated with cardiac and renal damage do not obtain enough improvement from operation to warrant its use. Patients whose blood pressure tends to decrease with rest and after administration of sedatives on pre-operative observation have proved suitable for serious consideration of operative treatment. A decrease of both the systolic and diastolic blood pressures is important, and the best results have been obtained when the diastolic pressure decreases to less than 110 mm. Hg under observation. Results have been classified as good, fair, and poor. Included in the good results are those patients whose blood pressure has returned to normal or nearly to normal and has remained so for long periods of time. In addition, relief of symptoms was also noted. Fair results are considered to have been obtained in cases where there is a small reduction of blood pressure with relief of symptoms over long periods of time. Those patients who have experienced a slight or moderate decrease of blood pressure with temporary relief of symptoms are adjudged to have obtained poor results.

In considering the results of surgical treatment of essential hypertension, it is apparent that the operation is of a physiological rather than a pathological nature and that the post-operative response depends on the amount of associated pathological changes in the peripheral vessels, heart, and kidneys.

In analysing the surgical results it is also necessary to keep in mind that patients who suffer from progressive hypertension face a four-year mortality rate of 30 per cent. in group 1, 42 per cent. in group 2, 78 per cent. in group 3, and 98 per cent. in group 4. Although sympathectomy may not be the ideal remedy, there is much evidence that it may prevent or delay complications that all too frequently cause death in the most productive period of the patient's life.

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THE VITAMIN K ACTIVITY OF 2-METHYL-1:4-NAPHTHOQUINONE AND ITS CLINICAL USE IN OBSTRUCTIVE JAUNDICE*

BY

JAMES M. MACFIE, M.B., M.R.C.P.Ed.
Kirk Duncanson Research Fellow,
Royal College of Physicians of Edinburgh

A. L. BACHARACH, M.A., F.I.C.

AND

M. R. A. CHANCE, B.Sc.
(Glaxo Laboratories, Ltd., Greenford, Middlesex)

Recognition that the chicken anti-haemorrhagic factor of Dam (1935) and Almquist and Stokstad (1935) might have therapeutic uses followed several publications in this country and the United States (Butt *et al.*, 1938; Dam and Glavind, 1938; Warner *et al.*, 1938; Illingworth, 1939; Stewart, 1939; Rhoads, 1939). Attempts to isolate, identify, and synthesize vitamin K led to the discovery that 2-methyl-1 : 4-naphthoquinone (formula 1), though not identical with any of the naturally occurring forms of the vitamin, had anti-haemorrhagic properties when tested on chickens (Almquist and Klose, 1939b; Thayer *et al.*, 1939a; Ansbacher and Fernholz, 1939). Recent announcements by at least two groups of workers (Binkley *et al.*, 1939; Fieser, 1939) show that one of the naturally occurring forms of vitamin K has the structure 2-methyl-3-phytyl-1 : 4-naphthoquinone. Its action on the chick appears identical with that of the simple quinone containing no phytol residue.

Batches of the quinone have been prepared in the Technical Research Laboratory of Glaxo Laboratories, Ltd., under the direction of Dr. E. Lester Smith; all the samples used for biological test or clinical trial have conformed to the following specification:

Methyl-naphthoquinone	not less than 98.5%
$E^{1\%}_{1\ \mathrm{cm.}}$	231 mμ, not less than 150
	250 mμ, not less than 1150
Loss *in vacuo*	not more than 0.15%
Chromium	not more than 0.01%
Melting-point	104° to 106° C.

The methyl-naphthoquinone was estimated by titration with titanous chloride, according to the method of Pinder and Singer (1939).

The compound has been found by us to be fully active on chicks in doses of the same order as those of the samples of natural vitamin examined by various authors. We have ourselves not had available highly purified specimens of the naturally occurring phytyl derivative, but we have been at some pains to compare the activities of various natural "concentrates" with one another and with the synthetic methyl-naphthoquinone.

The methods of biological test used did not differ substantially from those described by a number of previous investigators (Schonheyder, 1936; Almquist and Stokstad, 1937; Ansbacher, 1939; Thayer *et al.*, 1938), and we would only call attention to certain points of technique, some of which constitute minor modifications in this type of work and may be of interest.

The diet consisted of rice flour (from polished rice), ether-extracted fish meal, and ether-extracted dried yeast, with adequate quantities of sodium chloride, cod-liver oil, and ferrous sulphate. The naphthoquinone supplements were fed to chicks that had received only this diet from 2 days old to 14 or 15 days. It was dissolved in cod-liver oil, and administered by means of a graduated pipette or a micrometer syringe straight into the chicken's gullet. Both crude blood-clotting times and "prothrombin times" (Almquist and Klose, 1939a) have been determined.

At first we experienced considerable difficulty in obtaining responses regularly graded to dose, although substances having vitamin K activity invariably promoted a clearly marked difference in mean blood-clotting times between chicks receiving no supplement to the vitamin-K-free basal diet and those receiving the diet with an adequate supplement of the substance. After a considerable number of experiments we have devised a method for obtaining samples of blood and determining its crude blood-clotting time that has overcome our difficulties; a description thereof may possibly assist others. On theoretical grounds it was obviously desirable to reduce to a minimum variations in the amounts present of the different substances taking part in the blood-clotting system; of these it seemed to us that thrombokinase was likely to be one of the most variable, particularly as it is known to be absent from blood and liberated rapidly by damaged tissues. After some discussion with Professor A. St. G. Huggett, to whom we are indebted for his interest in the matter, we concluded that direct puncture of the heart was likely to introduce an adequate though not excessive, and a nearly constant, amount of thrombokinase, whereas the methods adopted earlier, such as puncture of the alar vein, involving varying degrees of laceration, would almost certainly not do this. These considerations have been justified by experience.

The birds are lightly anaesthetized with ether, and the heart is then exposed. A puncture is made in the left latero-ventral surface of the ventricle with a 22 S.W.G. syringe needle detached from any syringe. The needle has previously been thinly coated inside and out with paraffin wax. This is easily brought about by dipping the needle into a xylol solution of the wax and then draining it and removing the solvent by light suction. We attach much importance to thorough mixing of the blood immediately after it has been withdrawn; this is done by allowing the blood to be pumped by the heart's own action to the rim of the syringe needle and standing this for a few seconds in a vertical position. The well-mixed sample is then distributed into the required number of glass capillaries made from ordinary glass tubing and having an internal diameter of from 2 to 3 mm. Several of these are filled from each sample of blood and are laid on the bottom of a flat metal dish, of which the under sid is immersed in a water-bath controlled thermostatically a 38.5° C. ± 0.3. Portions of the capillaries are broken o from time to time and examined; as soon as a clot is forme —easily observed by breaking the capillary and pulling th two pieces apart—the time is noted as the crude blood-clotti time of the sample. Good agreement is shown by duplica samples and, as will appear below, quite reasonable cons tency in a group of animals receiving the same dose.

Samples of the compound have also been tested for th effect on the "prothrombin time" as recommended Almquist and Klose (1939a); here again significant lowerin the prothrombin time was obtained with doses of the s order as those producing significantly lowered crude bl clotting times. Two portions of the same sample can be to determine both blood-clotting time and prothrombin

In spite of the practice of a number of investig who attempt to define in "units" the vitamin K ac of methyl-naphthoquinone or other substances sh vitamin K activity, it is not, in the absence of a sta preparation for vitamin K, desirable to make more a qualitative statement as to the activity of such substances.

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* Received for publication on October 13, 1939.

Indispensable prerequisites to standardization are the elaboration of methods having as low an inherent error as possible and the preparation of a stable standard material. A recent test carried out by us on one sample of methyl-naphthoquinone seems to indicate that this should not present insuperable difficulties. The doses given to the individual animals were divided into four equal portions and administered apart from the basal diet, as described above. The animals were killed five days after the first dose, the final twenty-four hours representing a no-dose period designed to eliminate any irregularities of response due to delayed absorption. Blood was collected in the manner described and the prothrombin times of all samples were determined, as well as the crude blood-clotting times. The results of both sets of measurements are given in Tables I and II and illustrated in Fig. 1. It will be observed that in our hands determination of crude blood-clotting times appears to offer a better means of biological assay than determination of prothrombin times, contrary to the recent finding of Almquist and Klose (1939a); nevertheless, the two sets of results follow the same general trend.

TABLE I

Dose of Methyl-naphthoquinone (microgrammes)	Number of Chicks	Crude Blood-clotting Times in Minutes			Prothrombin Times in Seconds		
		Mean	Coeff. of Variation*	Standard Error of Mean	Mean	Coeff. of Variation*	Standard Error of Mean
Nil	10	All animals gave over 30 minutes: six gave over 40			Not determined		
0.4	7	23.6	22%	2.0	86	35%	11.4
0.8	9	16.0	24%	1.3	59†	24%	5
1.6	10	9.8	18%	0.55	53	32%	5.5
3.2	7	4.4	20%	0.31	27	37%	3.7

* $\frac{100 \times \text{standard deviation}}{\text{mean}}$ † Eight animals only.

TABLE II.—P (*Probability that Differences are due to Chance—that is, to Random Errors of Sampling*)

Doses (microgrammes)	Crude Blood-clotting Times	Prothrombin Times
0.4 and 0.8	1 in 20	1 in 20
0.8 and 1.6	Less than 1 in 1,000	1 in 3
1.6 and 3.2	Much less than 1 in 1,000	1 in 1,000

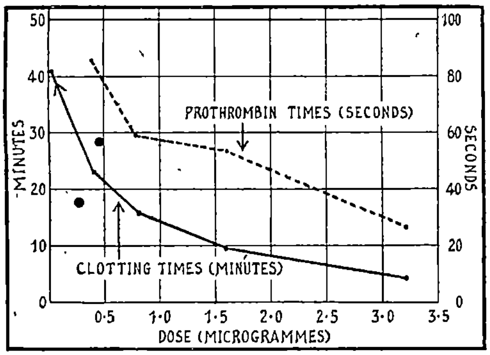

FIG. 1.—Showing the effect of 2-methyl-1:4-naphthoquinone on the crude blood-clotting times and the prothrombin times of vitamin-K-deficient chicks.

The relation between y, the response (crude blood-clotting times), and x, log dose (in microgrammes), is found to be expressed by the equation: $y = 14{\cdot}6 - 21.9x$. The usual test was applied to the plotted points for departure from linearity of regression, but the mean square due to "deviations from linear regression" was less than that "within doses." The value of z was -0.40 with a 5 per cent. point of 1.5. Hence there is no significant departure from the linear relation.

Thayer *et al.* (1939b) have suggested the use of 2-methyl-naphthoquinone as a suitable standard preparation for the assay of vitamin K; it was with the same idea that we prepared (before their publication was available) the dosage/response curves shown in this paper. It seems to us, however, that the argument can be developed a stage further. If the methyl-naphthoquinone is found to have the same therapeutic action on human patients as concentrates of naturally occurring vitamin K it would be possible to dispense altogether with biological assays and the need for a standard preparation—except in so far as estimates of vitamin K in different food materials were required for use in dietary surveys. This possibility appealed to us the more in that the biological tests cannot, in our experience, be depended on always to give clear-cut results. The mean blood-clotting time produced by the same dose of vitamin K in different groups of chicks varies, as does the difference in mean blood-clotting times produced by a given difference in dose level. In other words, the test has a high inherent error, due both to high variance of the animals in a test group and also to variations in the slope of the dosage/response curve. Although a number of workers have published particulars of tests carried out at various dose levels (notably Ansbacher, 1939, and Thayer *et al.*, 1939c), such publications have not always included adequate statistical analysis of the results.

As Thayer *et al.* (1939b) have pointed out, the methyl-naphthoquinone needs no biological assay; its purity can be established by chemical and physico-chemical tests. The methods of Pinder and Singer (1939) can afford far greater guarantee of purity and potency than any test on animals. One of us has therefore investigated the effect of pure 2-methyl-1:4-naphthoquinone itself on a short series of cases; the substance was administered as a sterile solution in olive oil.* Unfortunately the investigations had to be abruptly stopped owing to the outbreak of war; it was, however, thought that the results warranted publication.

The prothrombin times of these cases were estimated by the method of Quick *et al.* (1935) and the prothrombin indices expressed in the manner described by Illingworth (1939). It will of course be realized that the "prothrombin index," as distinct from the "prothrombin time," determined in the chick experiments, is directly related to the blood-clotting time. As this decreases and the patient's condition improves, so the prothrombin index increases; the prothrombin time of Almquist and Klose diminishes with increasing doses of vitamin K or methyl-naphthoquinone.

Case I

A man aged 62: this patient had been ill for eight weeks. At the onset of the illness his appetite became poor and fatty foods began to upset him. A week later jaundice appeared, and progressed steadily till the time when he was first seen. The jaundice was of an obstructive type.

On examination marked jaundice was present. There was slight guarding of the muscles of the right upper quadrant of the abdomen. No enlargement of liver, gall-bladder, or spleen was detected. The prothrombin index was 29 per cent. Naphthoquinone 10 mg. was given intramuscularly; 5 mg. was given next day, and 5 mg. on the third day. The prothrombin was again estimated, and found to be 78 per cent. At this time he had some vomiting and nausea, which passed off in two days. On the sixth day the prothrombin was 93 per cent., no more naphthoquinone having been given since the third day. On the eleventh day he was operated upon and extensive adhesions and a large carcinoma of the pancreas were found; cholecyst-gastrostomy was performed. There was a moderate ooze at operation. He was given 5 mg. of naphthoquinone that day and the next. On the third day after operation he was given 5 mg., and the prothrombin was 100 per cent.: he was somewhat drowsy. From the fourth day after operation onwards he had 10 mg. naphthoquinone daily by mouth. On the seventh day after operation the prothrombin was 93 per cent. By this time he was drowsy and confused. The cholecyst-gastrostomy did not function. He died on the eighth day after operation.

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* Available under the name of "kapilon" G.L., as 0.5 per cent. solution in 1 c.cm. ampoules.

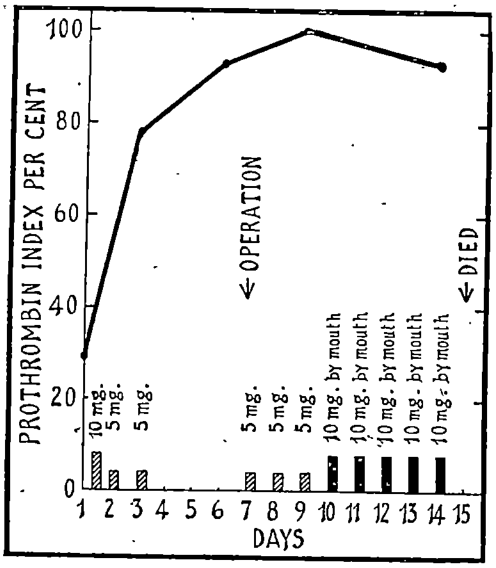

Fig. 2.—Chart of Case I.

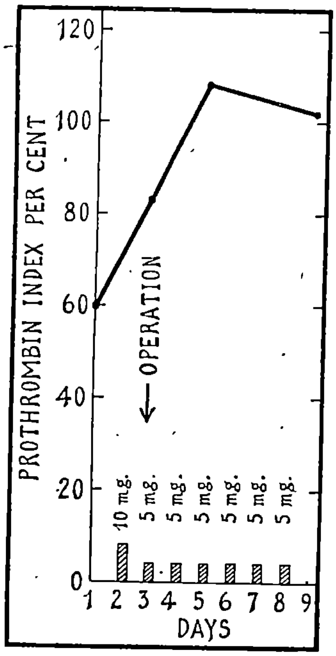

Fig. 3.—Chart of Case II.

Case II

This patient was a woman aged 69 who had had digestive symptoms for two years. She suffered chiefly from nausea and flatulence. For a year or so she had occasionally been jaundiced, and on admission had been jaundiced for three months. She had a constant dull ache in the epigastrium.

On admission she was moderately jaundiced. There was tenderness and slight guarding of the muscles in the epigastrium. No enlargement of liver or gall-bladder was detected. There was no evidence of functioning gall-bladder on radiological examination. The prothrombin index was 60 per cent. She was given 10 mg. of naphthoquinone next day and 5 mg. daily by intramuscular injection thereafter. On the third day the prothrombin was 83 per cent. She was operated upon that day, and carcinoma of the liver and bile ducts was found: no relief of the jaundice was possible. On the second day after operation the prothrombin index was 108 per cent. She was feeling better. On the fifth day the administration of naphthoquinone was stopped. Next day the prothrombin was 102 per cent. Her condition was stationary. The patient was evacuated from hospital and lost sight of.

Case III

This case was that of a woman of 69 who had had silent progressive jaundice for three weeks before she was seen. For a week or so she had had severe vomiting after food—even water made her sick. On examination she was very frail and weak. Marked jaundice was present. No enlargement of liver or gall-bladder was detected. Operation was deemed inadvisable. The prothrombin index was 37 per cent. She was given 10 mg. of naphthoquinone intramuscularly on the first day, 5 mg. on the second day, and 5 mg. on the third day. By this time the prothrombin index had risen to 125 per cent. There was some difficulty in getting the specimen of blood; this may explain the exceptionally high figure. On the fourth day 5 mg. of naphthoquinone was given, administration thereafter being stopped. Her clinical condition remained the same until the seventh day, when the index was 98 per cent.

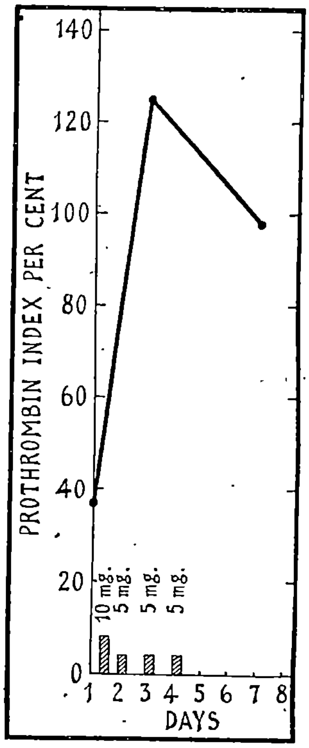

Fig. 4.—Chart of Case III.

Case IV

This patient, a man aged 55, had a five-months history of illness. At the beginning he had abdominal pain and diarrhoea, followed two days later by jaundice, which responded partially to treatment as catarrhal jaundice. The condition persisted, and when first seen he was a well-covered man showing marked jaundice. The gall-bladder was enlarged and palpable. The prothrombin index on the first day was 39 per cent. At 9 p.m. he was given 10 mg. of naphthoquinone; at 8 a.m. next day he received a further dose of 10 mg. A specimen of blood was taken at 9 a.m., and the prothrombin index was 78 per cent. At operation two days later a large carcinoma of the pancreas was found: a cholecyst-enterostomy was done. The writer was then called away. On the fourth day after operation the index was estimated

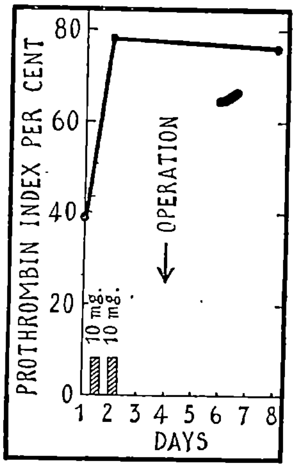

Fig. 5.—Chart of Case IV.

by Dr. A. G. R. Lowdon and found to be 76 per cent., no naphthoquinone having been given in the interval.

Commentary

The problem of haemorrhage in jaundice has recently been reviewed by Illingworth (1939).

Butt, Snell, and Osterberg (1939) found that the effects of intramuscular administration of vitamin K concentrates were not striking. The results herein reported of the use of 2-methyl-1 : 4-naphthoquinone as a synthetic substitute for natural vitamin K are most striking. This preparation, when given to four cases of obstructive jaundice with low prothrombin indices, has raised the index considerably in all of them within two days. In the last case the change was evident within twelve hours: it is probable that the effect was present in the other cases at that stage too, but was not recognized because the index was not estimated soon enough. It is hoped that, when conditions are favourable, further work will be done on the question of the rapidity of this change.

The results suggest that the intramuscular use of this synthetic product is effective in raising the prothrombin index in cases of obstructive jaundice. Its value in the prevention and treatment of haemorrhage in jaundice is apparent. The rapidity of its effect as shown in Case IV —within twelve hours—suggests that it may be particularly valuable in the treatment of post-operative bleeding in jaundice. There was no opportunity of investigating this in the present series of cases.

Our thanks are due to Professor Illingworth for his kindly encouragement and advice, and the thanks of one of us in particular (J. M. M.) to the physicians and surgeons to the Royal Infirmary of Edinburgh for allowing access to their cases; we are also indebted to Mr. T. Middleton for technical assistance in the experiments with chickens.

Addendum

While this paper was in the press we have learnt from Dr. K. K. Nygaard, who has described the successful use of vitamin K concentrates in the treatment of neo-natal haemorrhage (1939), that 2-methyl-1: 4-naphthoquinone is also effective. He writes: "A dosage of 5 mg. intramuscularly and 5 mg. per os seems sufficient. The prothrombin content is usually within normal limits after ten to twenty-four hours. The same dosage is used parenterally for prophylaxis, the injections being performed after the delivery of the baby."

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THE SIMPLIFICATION OF TECHNIQUE IN PERORAL ENDOSCOPY*

BY

V. E. NEGUS, M.S., F.R.C.S.

Surgeon for Diseases of the Ear, Nose, and Throat, King's College Hospital

Peroral endoscopy is a difficult and dangerous art, and for most of us who practise it everything must be done to simplify the technique. Even with every available aid that can be provided there are still many failures and disasters. It is impossible for the average laryngologist to emulate the success of those who devote their whole lives to this branch of surgery, nor do many possess the necessary skill. For my part I have recognized my limitations, and have constantly endeavoured to make such alterations as appeared practicable—not with the ambition of improving on the work of my teachers but rather to make up for lack of skill by simplification of methods and thereby to obtain some measure of success.

Anaesthesia

For the safe performance of *endoscopy* the patient must lie quietly for as long as desired, without changing position and without being restrained. If this desideratum is not attained there will be mental anxiety for both surgeon and patient and greatly increased difficulties in manipulative technique. It is essential that the operator should not be hurried.

I myself prefer to carry out *oesophagoscopy* under general anaesthesia, except when dealing with cases of cardiospasm. The tubes used are of large size, and the manipulation is often lengthy, as, for instance, in the insertion of radon seeds. It is most important that the position of the subject should remain unchanged, otherwise perforation of the mediastinum or aorta might follow. Particularly during the removal from the oesophagus of sharp foreign bodies such as bones or pins, complete relaxation and immobility must be obtained, and for this type of work I consider general anaesthesia to be essential in every case. A preliminary basal anaesthetic, such as avertin, paraldehyde, or morphine and scopolamine, is given, followed by intratracheal administration of gas-and-oxygen.

Bronchoscopy is far less upsetting than oesophagoscopy, especially as, in my practice, large oesophagoscopes are employed. In adults bronchoscopy and laryngoscopy may be carried out satisfactorily under local anaesthesia, after a preliminary injection of morphine and scopolamine. Children are more readily examined after being given a rectal injection of paraldehyde; this by itself is usually sufficient, but if there is much restlessness a little inhalation anaesthetic may be required.

Position of Patient

The use of a head-rest, elaborated from that of Haslinger, facilitates endoscopic procedures for the majority of surgeons. There is then no necessity for a skilled assistant to hold the head, nor is there any change of position, however long a time is taken in examination or manipulation. The position of the patient is under the direct control of the surgeon and can be regulated minutely. With a head-rest there is no necessity for the operator to alter his position: the table is raised or tilted so as

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[*] Read in opening a discussion in the Section of Oto-rhino-laryngology at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

to bring the lumen of the bronchoscope or oesophagoscope into line with the surgeon's eye. This is of especial advantage in examining the lower end of the oesophagus, when a crouching position would be necessary if the table remained stationary. Arm-rests keep the patient's body in a central position and replace a second assistant. Instruments are kept at hand in a sterilized holder or quiver, and are thus readily available.

Instruments

Laryngoscopes.—To facilitate examination of the larynx an attempt was made to produce an instrument with an unobstructed lumen but with a powerful beam of light thrown beyond the lower aperture. This desideratum was attained by the use of twin lights set obliquely into the walls of the laryngoscope, provided with lenses to focus each light into a parallel beam; the two beams overlap just beyond the lower aperture of the tube. The instrument designed is evenly balanced and is easily sterilizable.

Bronchoscopes have been designed with slight changes from those of Chevalier Jackson. The upper third, which remains in the mouth and pharynx, is funnel-shaped, so as to give more room for inspection and for the introduction of instruments. The light and its carrier are extremely thin, and are carried in a groove and not in a tube; with small bronchoscopes the consequent gain of a millimetre is of considerable advantage. Distal illumination is relied on, with the addition of an attachable proximal projector for general inspection of the bronchi on occasion; oblique lighting, as used in my laryngoscopes and oesophagoscopes, is unsuitable for bronchoscopes.

The *oesophageal specula* and *oesophagoscopes* have been designed on lines similar to the laryngoscopes already described. The obliquity of the lamp must be so designed that the full beam of light can pass uninterruptedly out of the lower aperture of the instrument, without any reflection from the walls. It is an advantage, in fact, if the walls are dull; they must never be polished. Any light reflected from the walls dazzles the operator and impedes his manipulations. The oesophagoscopes used are very large, up to a full size of 20 x 18 mm. It is sometimes forgotten that the oesophagus is wide and lax; it is more readily examined if held open by a big speculum or oesophagoscope, thus enabling a comprehensive view of the whole viscus to be obtained without movement of the instrument. The bronchi, on the other hand, are relatively narrow and rigid, and will only accommodate tubes of a size too small to be effective in the gullet.

Endoscopic Trolley.—A movable trolley, containing a powerful and silent suction pump, is used; the pump can produce a complete vacuum, which is of advantage when fine bronchoscopic suction tubes are in use. Rheostats are built into the trolley to transform current from the main down to the desired voltage. All the controls are detachable and sterilizable, thus enabling the operator to adjust the lights for himself.

Forceps.—The forceps used are made with an extended sliding tube, to prevent bending of the stylet.

Suction Tubes.—Bronchoscopic suction tubes are made with a flexible end of gum elastic to allow of easy introduction into bronchi diverging from the main stem.

Dilators.—Dilating bags of two sizes are used, mounted on a flexible gum-elastic end connected to a metal tube. They can be passed through strictures under direct vision.

Eye Shield.—To enable a clear view to be obtained throughout a bronchoscopic examination a glass shield is employed. It consists of a toughened glass disk, sterilizable by boiling. The disk, if soiled, can be rotated so as to bring a clear area in front of the operator's eye.

Conclusion

The goal to be attained is the establishment of efficient endoscopic centres in every large town and city, in charge of capable surgeons. It is my sincere hope that the technique described may be of help in fulfilling this object.

TREATMENT OF GASTRO-INTESTINAL ACHALASIA BY SPINAL ANAESTHESIA

BY

E. D. TELFORD, B.Chir., F.R.C.S.

Emeritus Professor of Surgery, University of Manchester

AND

H. T. SIMMONS, M.D., Ch.M., F.R.C.S.

Research Fellow, the Royal Infirmary, Manchester

The mechanism of gastro-intestinal peristalsis is not yet fully understood. The smooth muscle of the tube is under the control of the autonomic nervous system, but the exact extent of this control is not known, because an unknown but not inconsiderable part in peristalsis is played by the automatic action inherent in the smooth muscle cell. Of the two antagonistic or complementary halves into which the autonomic system is divided it would appear that the sympathetic is the "filler" nerve, whilst the parasympathetic is more concerned with propelling material along the tube. This view is possibly too simple to be true, because it may be that the action of either of these systems will vary with the state of the tube at any given time. There is, however, considerable evidence, clinical and experimental, for the view that the sympathetic system, by its control of sphincteric action, maintains a section of the tube in a full condition, and on relaxation of the sphincteric action the parasympathetic passes the contents along the tube.

Such mechanism implies a delicately co-ordinated balance between the sympathetic and parasympathetic systems, and if for any reason that balance is disturbed some disorder of function will result. Should the imbalance take the form of over-action of the sympathetic or of under-action of the parasympathetic there will be a failure of sphincteric control adequately to relax, with the result that the section of tube above the obstruction will in course of time become dilated and hypertrophied. To this failure of sphincteric action to relax Hurst has given the name of achalasia, and in this condition is to be found the most likely explanation of congenital megacolon and of mega-oesophagus (the so-called cardiospasm).

Congenital Megacolon

There can be no doubt that, while many of the less severe forms are amenable to medical measures, the treatment of the more severe types should be by surgery. The earlier interventions of the surgeon took the form of resections or short-circuiting. These methods, always dangerous and often futile, were discarded when the neurogenic basis of the disease was discovered, and the attack was then directed to an interruption of the sympathetic supply. This method, carried out in various ways, has given most excellent results, but a recent paper by Stabins, Morton, and Merle Scott (1935) causes one to doubt whether these operations are really necessary for the cure of congenital megacolon. These writers have made the important observation that in a number of cases of congenital megacolon in which a spinal anaesthetic was given purely for diagnostic or prognostic purposes the patients, on subsequent examination, were found to be "practically completely cured."

As the result of this suggestion we have, since January, 1938, treated six cases of congenital megacolon in children by spinal anaesthesia alone, and to these we are able, by the courtesy of Mr. R. L. Holt, to add a seventh case. These seven cases were all severe types of the disease, suffering from most obstinate constipation, with radiological evidence of an enormously dilated redundant colon. They showed also in a marked degree the sallow facies, the under-development, and the lethargy, both mental and physical, which are always so striking a feature of the severer types of the disease. The patients were six boys and one girl, and their ages ranged from 6 months to 12 years.

The spinal anaesthetic was with two exceptions given by Dr. Falkner Hill, the drug used being decicaine in heavy solution. The nature of the drug used is probably immaterial, but it is essential that the upper limit of anaesthesia should reach the anterior root of the sixth thoracic nerve. This is necessary to ensure that the whole of the sympathetic supply to the gut is affected by the anaesthetic. The after-treatment has consisted of a regular daily dose of liquid paraffin, with a simple enema on alternate days. This treatment has been carried out for two weeks only.

Each case has been regularly examined since the anaesthesia, and all the children have been seen within the last month. The results are remarkably satisfactory. Four of the children are completely cured, and have had neither purgative nor special diet since they left hospital—they each have a normal daily motion. Three are almost completely well, but still need a small weekly dose of a mild laxative. In all cases there is evident the same gain in weight, colour, and energy as is seen after a successful sympathectomy. Those which have been re-examined by barium enema show that although function is perfect the enlarged bowel has not returned to normal, but is about half its former size. This again is in keeping with the radiological findings after sympathectomy.

Case Histories

Case 1.—A boy aged 11½ years. Severe constipation since birth. Had been given enemata regularly, but averaged ten days between motions. He was undersized, sallow, and lethargic. The abdomen was distended and contained several large faecal masses. Barium enema showed gross dilatation of the descending and pelvic colon, with an extra loop of pelvic colon. A spinal anaesthetic was given on January 16, 1938, and resulted in complete cure of the symptoms. The boy is now well grown, of good colour, and is doing well at school and games. He has had no purgative medicine since leaving hospital.

Case 2.—A boy aged 4½ years. Constipation since birth. Under treatment in hospital the bowels acted twice in ten days. A thin pale child with distended abdomen. Spinal anaesthetic given on January 20, 1938. This patient has shown great improvement. His general condition is now excellent, but a small occasional dose of paraffin is still needed. (Mr. R. L. Holt's case.)

Case 3.—A boy aged 10 years. History of constipation from birth, alternating with long periods of "diarrhoea." On admission he had several fluid motions in the day. These were due to a retention colitis. The distended abdomen showed several faecal masses, one as large as a coconut. Spinal anaesthetic on May 24, 1938. This patient remains completely cured. No purgatives are needed, and the improvement in his general condition is evident from the fact that he has gained a scholarship at his school and has distinguished himself in swimming.

Case 4.—A boy aged 12 years. Always constipated, and on two occasions admitted to a hospital for "obstruction." On admission he had a distended tender abdomen with colic. The bowels were unloaded with difficulty. A barium enema showed "a very distended colon with poor haustration." Spinal anaesthetic on July 14, 1938. He has been seen regularly, and the last note reads: "Result most satisfactory. General condition excellent. Good colour and full of energy. Bowels move daily without aid."

Case 5.—A boy aged 9 years. Had always been constipated, and averaged seven days between motions. A thin sallow boy with enlarged abdomen and palpable pelvic colon. Spinal anaesthetic on October 6, 1938. This boy remains almost completely cured, but needs a "chocolate laxative" once a week. He is growing well, is of healthy colour, and is very active.

Case 6.—A girl aged 5 years. A thin, under-developed, and very sallow child who has needed regular purgatives and enemata since birth. Frequent abdominal colic and occasional vomiting. Had a distended abdomen, and the barium enema showed "much dilatation of the colon, chiefly in the rectal and pelvic sections." On January 17, 1935, a lumbar sympathectomy was attempted under general anaesthesia, but owing to an anaesthetic mishap it is certain that the operation was incomplete, and no benefit resulted. On October 21, 1938, she was given a spinal anaesthetic, since when she has been much improved. She needs senna once a week. A barium enema given on July 7, 1939, showed "slight ballooning of the rectum and distal part of the pelvic colon. The proximal part of the pelvic colon shows lack of haustration. The rest of the colon shows normal haustration and appears to be of good tone."

Case 7.—A boy aged 6 months. Constipation since birth, with an enormous abdomen and "very definite radiological evidence of enlarged colon." This case had been very thoroughly treated in a special hospital, but without any improvement in the condition. The baby was under weight, and the abdomen was enormous, with wide separation of the recti. A spinal anaesthetic was given on February 14, 1939, and from that time the bowels have acted daily without assistance. The child is now of normal weight and colour. The abdomen has steadily diminished in size, and the infant now appears normal in every way.

Mega-oesophagus (Cardiospasm)

This condition is now regarded as an achalasia, or failure of the cardio-oesophageal sphincter to relax. This causes the obstruction to which the dysphagia, the oesophageal dilatation, and the other distressing symptoms are due. The treatment has so far proved difficult and disappointing. Some of the less severe cases are able to carry on by periodical use of the mercury bougie. The more severe have been treated by retrograde digital dilatation, or by the attempt to establish an anastomosis between the stomach and the dilated oesophagus. Owing to the difficulties and grave dangers of these methods Knight's (1934) suggestion that the sympathetic supply to the cardiac sphincter might be interrupted by the simple operation of resection of the left gastric artery was received with enthusiasm. The operation was practised by several surgeons, but most unfortunately the results have not justified the hope that was aroused. Our own experience of the operation is limited to three patients, in only one of whom was there a slight improvement. The failure of this easy and attractive procedure is explained in a paper by Mitchell (1938), who has shown that those fibres which accompany the left gastric artery are merely one part of what is in fact a very complex innervation, and that Knight's operation must inevitably fall short of a complete sympathetic denervation of the sphincter.

In view of the good results obtained in cases of megacolon by spinal anaesthesia alone it seemed to us obvious that the same method should be tried in mega-oesophagus. Accordingly, when in July, 1938, a very typical example of mega-oesophagus in a young man was referred to us for treatment, we asked Dr. Falkner Hill to administer a spinal anaesthesia which should include the first thoracic nerve, and so paralyse the whole of the sympathetic outflow from the spinal cord. This was done, and on the same evening his power of swallowing was completely restored, and he has not had the slightest difficulty with any type of food since the anaesthesia. Short notes of the case are as follows:

A male slipper worker aged 26 had suffered from dysphagia during two years. Difficulty was always present. At the best he could get down some solid food with the help of copious drinks, but often a whole meal was returned unaltered a few minutes after he had eaten. He had lost one and a quarter stone in weight, was very weak, and was unable to work. Routine clinical examination showed nothing abnormal. The radiological examination revealed an enormous oesophagus with a rounded cul-de-sac from which emerged a thread-like trickle of barium. Spinal anaesthesia, including level of T.1, was given on July 29, 1938. The relief of symptoms was immediate and complete. A barium swallow some six months afterwards showed that the bulk was passed direct into the stomach. The oesophagus was still large, but had been reduced to about a half of its former size. A portion of the barium was held up in the cul-de-sac. It will be noted that this finding is exactly similar to those in successful cases of megacolon, in which, although function is fully restored, the anatomical restoration is far from complete. The patient remains completely cured, and in July, 1939, he wrote: "My cure is maintained. I ate yesterday toast, cheese, potatoes, onions, and kippers. My weight has returned to 10 st. 4 lb., which is as much as I ever weighed."

Discussion

We offer no explanation of these results from the use of spinal anaesthesia alone, but think it worth while to record the facts which have emerged from this work. The temporary but complete knock-out administered to the sympathetic supply appears to have brought the two halves of the autonomic system once more into step.

Although mega-oesophagus may be of congenital origin, it is a fact that in later life the actual onset of symptoms is in some patients precipitated by a shock, and it may be that the further shock of the spinal anaesthetic corrects the imbalance. Mega-oesophagus is a rare condition, and it is unlikely that any one surgeon will meet with a number of cases large enough to permit an authoritative opinion on its treatment. We therefore publish this single instance in the hope that this simple treatment may be put on trial.

The ever-present handicap to the successful treatment of disease by interventions aimed at the sympathetic nervous system is the existence of secondary fibrotic changes in the affected organ. This fibrosis eventually converts the viscus into a fibrous bag and progressively destroys the normal neuromuscular mechanism, on the restoration of which the operation depends for its success. For this reason the method we describe, if it is to succeed at all, will be more hopefully tried in the earlier cases.

Summary

Seven cases of megacolon in children have been treated by spinal anaesthesia alone with excellent results.

A case of mega-oesophagus (cardiospasm) treated by spinal anaesthesia remains completely cured.

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DIPHTHERIA PROPHYLAXIS

A REVIEW OF THE ANTIGENS AND METHODS AVAILABLE

BY

J. TUDOR LEWIS, M.D., D.P.H.

(From the Health Department of the County Borough of Croydon)

Attention has been directed in earlier communications (Lewis, 1939a, 1939b) to the lack of uniformity in the current processes adopted in this country for controlling diphtheria by active immunization. A questionary issued by Dr. O. M. Holden, the medical officer of health for Croydon, to the medical officers of some 140 of the larger urban authorities revealed an astonishing miscellany of method, not confined to the organization of the schemes but extending to the antigens themselves. Quite clearly there is no consensus of opinion on the merits of the various preparations.

A review of the literature was made for the purpose of this paper, but it has been sacrificed to the present urgent pressure on editorial space. Some of the earlier workers in this field reported rather low rates of conversion to the Schick-negative condition after the use of various antigens, though little doubt can remain in one's mind that by the proper use of toxoid—T.A.M. or T.A.F.—highly satisfactory results can be obtained. Up to 1938 in this borough approximately 99 per cent. of children who had previously received three injections of T.A.M. or T.A.F. were found to be Schick-negative. Glenny and colleagues (1926, 1931a, 1931b) discovered the antigenic advantage resulting from the employment of alum with toxoid. For some time certain workers used these alum preparations in one dose—the so-called "one-shot" method—but in some series a disappointingly high percentage of the children were found to be Schick-positive when tested later. Chesney (1936), on the suggestion of Dr. R. A. O'Brien, used a first small dose to "detect" children who were unusually liable to troublesome reactions, followed four weeks later by 0.5 c.cm. In groups of 185 children in 1936 and 1,555 in 1938 and 1939 Chesney (1938, 1939) obtained a 99 per cent. Schick-negative rate four weeks after the second injection. A number of authors quote percentages from 97 to 100.

Results obtained in Croydon

It may help, at a time when large numbers of town children are being transported to rural and potentially susceptible districts, to give the results that have been obtained in the county borough of Croydon. With three fortnightly doses of 1 c.cm. of T.A.M., 2,163 children originally Schick-positive gave a conversion rate to Schick-negative of 99 per cent. A.P.T. was given to 1,039 children—760 originally Schick-positive and 279 not

Schick-tested. At first the earlier dose was 0.1 c.cm., but, since virtually no reactions were met with, this dose was increased to 0.25 c.cm., and the period between inoculations lengthened from two to four weeks; 99 per cent. of the children, tested eight to twelve weeks after the second injection, were Schick-negative.

One of the supposed disadvantages that have militated against a more general use of A.P.T. is its alleged tendency to cause severe reactions. In the present series the parent of each child was specifically asked what discomfort, if any, each injection had caused. "Discomfort" was accepted as a reaction if the child had himself complained without being questioned; or if he were obviously unwell within a day or so of the injection, there being no other explanation of his malady. In the accompanying table are given the reactions that were recorded. Thirty-five of these were mild and occurred after the first injection of 0.1 to 0.25 c.cm.; eight were severe, seven occurring after the first injection and one after the second injection.

Reactions after A.P.T.

Age Group	Total Cases	Total Reactions	Reactions %
1–5	402	4	0.99
5–8	334	11	3.3
8–10	154	9	5.8
10–14	192	19	9.9
1–14	1,082	43	3.9

Of the eight severe reactions one occurred in a child aged 5, three in children aged 8, three in children aged 9, and one in a child aged 14. There was a slight superficial fluctuation in one case, which, however, resolved without incision. The others consisted of extensive redness with brawny swelling extending over the whole of the back of the arm, with pain and tenderness, lasting in some cases for more than three weeks. Only one severe case occurred in 736 children under 8 years of age and seven in 346 children of 8 years or more, a percentage of 2. So far, therefore, as fear of reactions is concerned, it is safe to give 0.5 c.cm. as a first injection to children under 8 years; over 8 years, with two severe reactions per 100 children, it will be wise to limit the first dose to 0.25 c.cm.

Discussion

The results obtained by some workers with T.A.M. and T.A.F. have varied widely, and those following the use of "one-shot" A.P.T. have been so diverse as to make this method clearly untenable. All the reports of the use of two injections of A.P.T. are in accord with a consistently high Schick-negative rate. The fears of reactions after A.P.T. seem to have been ill founded, as the table clearly shows. No doubt in the early days high proportions of reactions were registered, but the manufacturers are now able to produce a very refined product, so that it may soon be justifiable to consider whether larger dosage should not be employed. These well-documented facts should go a long way towards giving A.P.T. by two injections a more accredited place in immunization schemes. This method is now employed in a little over 40 per cent. of schemes investigated (Lewis, 1939b); there is no reason why the other 60 per cent. should not have equal confidence in its efficiency.

Summary

In Croydon 2,163 children originally Schick-positive gave a conversion rate to Schick-negative of 98.9 per cent. when tested three months after three injections of T.A.M.

A group of 760 children originally Schick-positive and 279 not previously tested were given two injections of A.P.T.—mostly 0.25 c.cm. followed by 0.5 c.cm. four weeks later. The former group gave a conversion rate to the Schick-negative condition of 99.2 per cent.; the latter group 98.9 per cent. No significant difference was found in different groups aged from 1 to 14. The number of reactions was small and no serious trouble occurred. This method of preventing diphtheria merits a greater popularity than it at present enjoys.

I wish to record my thanks to Dr. O. M. Holden and Dr. D. D. Payne, medical officer of health and deputy medical officer of health respectively of Croydon, for help in the preparation of this paper; and to the former for permission to publish it.

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Clinical Memoranda

Fractured Femur due to Muscular Violence in a Case of Epilepsy Treated by Epanutin

This case is of particular interest from two points of view. First, although fracture of the femur as the result of the muscular violence of a cardiazol or triazol convulsion is now a recognized entity, an extensive search of the literature failed to reveal such an occurrence due to the muscular violence of an epileptic fit. Secondly, in view of the present vogue for the use of epanutin in the treatment of epilepsy the possibility that this fracture may be a complication of its administration is worthy of note.

CASE HISTORY

A man aged 37 was admitted to Cane Hill Mental Hospital on June 17, 1938, suffering from "insanity with epilepsy." He was subject to many fits, the majority of which were nocturnal. From the time of his admission until March, 1939, he was given 1 grain of sodium luminal thrice daily. During this period he had bouts of confusion both before and after fits. He was querulous, quarrelsome, and bad-tempered, and at times impulsively aggressive to the patients or nursing staff.

On March 9, 1939, he was given epanutin. A complete transference was effected, so that his sole medication was one capsule of epanutin thrice daily. On this his temperamental condition began to improve, but he still had many fits. On April 11 the dosage of epanutin was increased by a further capsule, given at 9 p.m. This produced a complete cessation of fits. From that day till the end of June (ten weeks in all) the patient had no fit. Unfortunately about six weeks after complete freedom from fits he started getting confused, and this gradually became worse. It remained continuously present and eventually necessitated bed treatment. As the patient had remained in this state for four weeks, on June 23 his epanutin was reduced to three capsules a day, with the idea of bringing on a fit.

On July 5 he had one fit during the day and one at night. He next had a fit on July 26 at night and another on the following night. The night nurse witnessed the latter fit and found the patient under the bedclothes, with these tucked in and in a normal position, so that there was no question of his having fallen. He recovered from his fit in the normal way. He made no complaints and at no time got out of bed, so the night nurse handed him over to the day nurse with no idea that he was injured.

Soon after the day staff had come on duty the patient complained of pain in the right thigh and knee. On examination I found that he had pain on the slightest movement of the hip-joint in any direction, and suspected a fracture. An *x*-ray photograph confirmed the existence of an intertrochanteric fracture of the neck of the right femur, but revealed no abnormality of bone structure or density. It is to be noted here that it was the opinion of the nursing staff that his fits during epanutin therapy, although much less frequent, were considerably more violent than on sodium luminal.

Until recently the explanation of this fracture would have seemed obscure, but the occurrence of intertrochanteric fractures directly due to the muscular violence of cardiazol convulsions described by Louis Carp (1939) and Hamsa and Bennett (1939) points to a similar explanation in this case. The missing link would seem to be the increase of the intensity, with the diminution of frequency, of epileptic convulsions during the treatment by epanutin.

I have to thank Dr. Lilly, medical superintendent of Cane Hill Hospital, for his permission to publish details of this case.

Donald Blair, M.B., D.P.M.,
Assistant Medical Officer, Cane Hill Hospital.

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An Unusual Case of Ruptured Ectopic Gestation

The following case is reported because it presents certain unusual features—namely, a large ovarian cyst on the contralateral side, with an acute appendicitis, the whole being distinguished by a notable absence of clinical signs. From the point of view of differential diagnosis the patient presented a confusing clinical picture.

Case Report

On September 26, 1939, a married woman aged 29 was admitted to the Warneford Hospital, Leamington Spa, with the complaint of intermittent abdominal pain of four days' duration. She had enjoyed good health all her life, and was the mother of two healthy children, the elder born in June, 1937, and the younger in November, 1938. Both confinements were quite normal in all respects.

From the birth of her second child the menstrual cycle had been regular, and the onset of her last period took place on the morning of September 18, the flow ceasing four days later. No abnormality was noted at the time. On the following day she had an attack of abdominal pain of some severity. The pain was peri-umbilical and "colicky" in nature. It was sudden in onset, and was associated with a feeling of nausea and some active vomiting. The vomitus was bilious. The pain persisted, but altered in quality and site. It became dull and aching in character, and was occasionally maximal in the right iliac fossa, while at other times it was more severe in the left iliac fossa, flitting from one side to the other for no apparent reason. When felt on the left side there was also a complaint of pain "in the middle of the back." The nausea and sickness diminished in severity after a few hours. She stated that "her period began again" on the 24th; there was fresh vaginal bleeding, slight in degree. The vaginal haemorrhage and abdominal pain persisted, and on the evening of the 25th the pain became more acute, this time in the right iliac fossa, and she sent for her doctor, who arranged for her admittance to hospital.

On admission her general condition was good. The temperature was 100°, pulse 100, and respirations 20. The pulse was of good quality and regular; the blood pressure was 125/75. The mucous membranes were fairly well coloured, although the cheeks showed some pallor. Examination revealed some generalized degree of rigidity of the abdominal muscles, principally in the right lower quadrant. On the left side some pain was felt on palpation, but the pain was most acute just below McBurney's point. No hyperaesthesia was found. No mass could be palpated, and there was no asymmetry of the lower abdomen. Vaginal examination revealed some fullness in both right and left fornices, with tenderness maximal in the right. The position and size of the uterus were normal.

The abdomen was opened through a right lower paramedian incision, with the patient in the Trendelenburg position. No free fluid or blood was found. The appendix was acutely inflamed and pelvic in position. The offending organ was removed, the intestines having been packed off from the pelvic viscera. The fingers were passed into the left side of the pelvis and delicate adhesions freed. At once a considerable quantity of blood gushed up into the wound, and a mass was felt in the left tube, which was withdrawn for inspection. The tube was distended with blood clot and ruptured in its ampullary portion. The condition was diagnosed as the intraperitoneal rupture of a tubal gestation, and left salpingectomy was performed.

The right side of the pelvis was now explored and a large cyst of the ovary identified and exposed. The cyst was about the size of a tennis ball, and no ovarian tissue was visible macroscopically in its wall. It was a simple serous cyst and had destroyed the whole ovary. A right oophorectomy was performed. The pelvis and pouch of Douglas were mopped clear of blood and the wound closed in layers. The patient made an uninterrupted recovery.

Commentary

This case has several features of interest. The combination of ruptured ectopic gestation, acute appendicitis, and large ovarian cyst is in itself unusual, but the presence of such marked pathology with relatively so few clinical signs is even more unusual. It is also of interest to note the size of the ovarian cyst, as simple serous cysts are generally of smaller proportions.

The diagnosis of acute appendicitis was established before operation on the history of peri-umbilical colic settling down in the right iliac fossa plus the rigidity and tenderness in the appendix area; but the possibility of a coincidental ectopic gestation was borne in mind because of the mass in the left fornix on vaginal examination, the occasional pain in the left side of the pelvis, and the vaginal bleeding. It is noteworthy in this connexion that there was no history of a missed period or of any menstrual abnormality whatsoever, while the woman did not present clinically any signs of internal haemorrhage, and the pain felt upon vaginal examination was not in the left side but rather in the right. It was thus possible to establish an accurate pre-operative diagnosis as regards the appendix and tubal pregnancy, but the ovarian cyst was found only after opening the abdomen.

Certain authorities are opposed to the removal of an appendix when there is free blood in the pelvis, on the grounds that the blood forms an ideal medium for the growth of bacteria and the resulting development of peritonitis. Provided that the patient is in the Trendelenburg position, and the intestines are packed well off from the true pelvis, appendicectomy may be performed with safety, and, of course, when the organ is acutely inflamed no other alternative can be considered. The risk of pelvic or general peritonitis is slight.

George B. Mair, M.D., F.R.C.S.Ed.,
Senior Resident Surgical Officer, Warneford Hospital, Leamington Spa.

Reviews

INDUSTRIAL HEALTH AND PREVENTIVE MEDICINE

Health in Relation to Occupation. By H. M. Vernon, M.A., M.D. (Pp. 355; 50 figures. 15s. net.) London: Oxford University Press. 1939.

In this volume the author attempts to make an estimate of the relative importance in industrial health of three main conditions—heredity, social environment, and occupation. For this purpose a survey is made under various headings of many contributing conditions bearing on the major points. The extent of ill-health and its underlying causes are fully explored with the help of statistics, records, and graphs related to the subject-matter. The book is an important and comprehensive study of the great field of preventive medicine and its application to modern conditions of life in general and to industrial life in particular. Each chapter has its appeal to the student of preventive medicine, and the subject-matter is presented in a most readable style. Those on "Heredity and Environment," "The Nutritional Requirements for Healthy Life," "The Effects of Inadequate Nutrition," and "The Economic Factor" will be of particular interest to the general reader.

It will be obvious that the interdependence of the three main points presents an almost insuperable difficulty in arriving at a conclusion as to their relative importance. This is well illustrated by the study of intelligence. Primarily a hereditary factor, it has so obvious an effect on occupation and social environment that any attempt to evaluate its effect on each seems impracticable, however interesting the task may be, and of minor importance to the study of the remedies needed to deal with the problem as a whole. Important reference is made to B.M.A. reports, especially to those on Nutrition and Physical Education. This is gratifying in view of the scant acknowledgment in other quarters of this pioneer work of the Association.

The last chapter deals with general conclusions and the steps needed to improve the general health by prevention of disease. These in the main are eugenic advances, the raising of wages, and the improvement of medical services. We venture to suggest an even more important and basic remedy. In our view the most urgent need of to-day is the education of the public and the profession in preventive medicine. The B.M.A. reports already referred to stand as evidence that the profession is becoming conscious of a corporate responsibility to the public and the State. We are still waiting for something more than lip-service to the teaching of preventive medicine in our medical schools. Not till this is achieved will the family doctor, the medical officer of health, and the industrial medical officer work together in a common effort to advance the public health. Along with this is the need for the education of our school children in the primary laws of health and hygiene. It is in this direction that we look with most hope for the future health of the nation.

We congratulate the author on this book and commend it to the profession.

THERAPEUTICS

The Essentials of Medical Treatment. By David Murray Lyon, M.D., D.Sc., F.R.C.P.Ed., Professor of Clinical Medicine, Edinburgh University. (Pp. 448. 15s. net.) London and Edinburgh: Oliver and Boyd. 1939.

It is an encouraging sign that of recent years so many books have been devoted to treatment. Professor D. Murray Lyon's *Essentials of Medical Treatment* is in fact the second contribution from the Scottish schools this year, and one of decided merit. A perusal of its pages reminds us how greatly and in how many respects methods have been changing. From the point of view of the pharmacist this has not been an unmixed blessing. There is little scope for the chemist who used to take such pride in the preparation of his own fresh infusions and the elegance of his dispensing. Now much of his time is taken up in handing out packets of tablets and bottles of proprietary drugs, while much of his revenue comes from toilet articles. At a time when his training has become increasingly scientific, he finds a good deal of the scientific and technical interest of his occupation going.

But to return to the book before us. We were particularly impressed by the sections on artificial pneumothorax, gastric ulcer, and nephritis. The discussion on the therapeutics of digitalis and quinidine will also prove very helpful to the student. We were interested in the description of a postural method of treatment for obliterative arteritis to replace the expensive apparatus in vogue, and in the plea made for controlling blood sugar by giving insulin as long as two hours before a meal. Another specially interesting point is the suggestion that the occurrence of epileptic fits may depend on an increased hydration of the body. Pituitrin, by holding up the output of water, may greatly increase their frequency. We are reminded of the late Sir Maurice Craig's persistent belief in some pituitary factor in obese epileptics. Of late it has been urged that pituitary obesity may largely depend on water retention in the tissues. This justifies Professor Murray Lyon's opinion that measures tending to reduce the body content of fluid should help in the treatment of epilepsy. He does not, however, mention salyrgan among those measures, although it has proved helpful in pituitary obesity. We note that he supports the popular lay opinion that sugar is bad for arthritics by pointing out that they often have a lowered sugar tolerance, but we remain unconvinced that sugar is really harmful for arthritis unless complicated by obesity or glycosuria.

It is, of course, unlikely that a book of this kind would contain nothing which challenges dispute. Thus we do not like the idea of such a depressing drug as apomorphine for acute gastritis, while on the other hand we have not found vinum antimoniale "much too depressing for ordinary use" in doses up to 10 minims. It is true that leeching is seldom employed nowadays for acute pericarditis; more's the pity, for it seems to relieve pain quicker than anything else. Its desuetude is probably due to the difficulty in supply and application than to any ineffectiveness. It is also true that gelatin has the reputation of favouring coagulation in an aneurysm, in spite of the experimental evidence that it actually quickens circulation time. We are surprised to learn that bismuth covers the normal gastric mucosa but not an ulcer, because this makes it difficult to understand how an ulcer crater is detected radiologically. Is it correct to say that the cystin of cystinuria is partly derived from the food? The late Sir Archibald Garrod maintained that the patient could deal with his exogenous cystin perfectly well, and that the condition was entirely an inborn error of endogenous metabolism. Many authorities would not agree that it is unsatisfactory to allow a diabetic to pass just a trace of sugar (especially if protamine insulin is being used). Hypoglycaemia is a greater danger than hyperglycaemia. We would commend bismuth iodo-subgallate to the author's notice for the treatment of haemorrhoids, and we found no mention of the ambulatory treatment of phlebitis which is gaining ground. We don't think the thyroid is the leader of the endocrine orchestra. That phrase was originally applied to the pituitary, and recent work has strengthened its claim to that position. Professor Lyon quotes the old adage, "Feed a cold and starve a fever," with approval, but how does one apply it to a feverish cold?

Some of these refer to legitimate differences of opinion —and none of them serious perhaps—but a more serious one is the omission of any precautions in the use of sulphonamide, whether for septicaemia (p. 30) or for urinary infections (p. 215). The whole book, however, is attractively written and the facts are clearly presented. There is a very useful appendix describing the technique of such procedures as blood transfusion and lumbar puncture, together with some convenient prescriptions for ordinary use. Altogether a serviceable book for students and practitioners.

DISORDERS OF THE FOOT

Functional Disorders of the Foot. Their Diagnosis and Treatment. By Frank D. Dickson, M.D., F.A.C.S., and Rex L. Diveley, M.D., F.A.C.S. (Pp. 306; 202 illustrations. 21s. net.) Philadelphia, London, Montreal: J. B. Lippincott Company. 1939.

Disorders of the feet have of late been attracting much more attention than formerly. From the time of Ellis's classic in the last century to the appearance of the first edition of Lake's *The Foot* in 1935 no book devoted exclusively to foot disorders had been published in this country. Almost simultaneously, however, Dudley Morton's *Human Foot* was published in the United States, and it is possible to see the influence of both these recent books in the latest addition to the literature of the foot, *Functional Disorders of the Foot,* by Drs. Dickson and Diveley of Kansas City. Although the title might suggest that the book was very limited in its scope, this is not the case, for it includes such structural and organic disabilities as hallux valgus and rigidus, march fracture, calcaneal spurs, etc. In so far, however, as most organic changes produce disturbances of the function of the foot the title is justified, and it is proper to add that a large section of the book is devoted to the subject of "foot imbalance." In this section it is especially commendable that a large amount of attention has been given to the foot of the growing child and to the question of disturbances of foot balance in childhood. In the earlier chapters evolutionary development, anatomy, and physiology are briefly reviewed; the authors accept the ideas of Lake and Morton that the arches are architectural features of the foot and not mere postures. The importance of a short and hypermobile first metatarsal and of metatarsus varus in the production of "imbalance" of the foot is well stressed.

Particularly interesting are the authors' views on the correct type of footwear for children and adults; for the former the heel should be wedged on the inner side one-eighth of an inch higher than the outer, while the rigid shank should be moulded so as to support the developing longitudinal arch. A shoe of this type would be regarded in this country as a corrective shoe, but it is the authors' contention that it should become the correct standard type, since "in the growing foot it is more important to maintain it in a balanced position on the leg than to build up muscle control." To many imbued with the doctrine that muscular control is all-important in the maintenance of the form of the foot this suggestion of providing any artificial support to the growing foot will be anathema, but the reviewer believes there is much wisdom in the authors' statement that "ideal natural conditions [for the development of the child's foot] do not exist in modern life, as most of the child's weight-bearing is on hard and non-resilient surfaces which, instead of providing a suitable medium for exercise and development, put an additional strain on the growing foot from which it must be protected by shoes providing sufficient support to make up for an insufficiency in the foot caused by restraint on development."

These quotations are enough to show the general character of this work, and there is no need to go further to demonstrate that it is a very worthy addition to the subject of foot diseases. It is well and copiously illustrated; the printing and general format are of high American excellence.

OPHTHALMIC SURGERY

The Principles and Practice of Ophthalmic Surgery. By Edmund B. Spaeth, M.D. (Pp. 835; 1,031 figures; 4 coloured plates. 45s. net.) London: H. Kimpton. 1939.

Dr. Spaeth's book is a welcome addition to the sparse English literature on operative ophthalmology. None of the current volumes is recent, and none covers quite the same field as this, which deals not only with operative technique but with the whole background of the surgical aspects of ophthalmology. The book is thus a contribution to surgical ophthalmology rather than a textbook of operative surgery in the narrower sense. It is unique in this respect in English ophthalmic literature. It is also unique in its comprehensiveness, and its 820 pages cover satisfactorily a big field which has not been so fully dealt with before. How fully the author has covered his subject is shown by the fact that half of the text is devoted to extra-ocular operations. This does not imply that the more usual intra-ocular procedures which constitute the greater part of the ophthalmic surgeon's work are dealt with schematically, but it emphasizes Dr. Spaeth's wide knowledge of the less common operations and the satisfactory way in which he has dealt with them. Indicative too of the thoroughness with which the work has been done is the fact that fully forty-three pages are taken up by the discussion on the surgical pathology and treatment of exophthalmos. Withal the book is well balanced, and what is particularly gratifying is its modernity in outlook, though here and there there is an occasional lapse, as in the omission of immediate mucous grafting for caustic burns of the conjunctiva and cornea.

The chapters on plastic surgery are particularly well done, and the illustrations are really helpful. The section on corneal grafting has been contributed by Dr. Castroviejo, and constitutes an authoritative statement on the subject. Goniotomy is dealt with equally authoritatively by Dr. Barkan, and the author has not hesitated to obtain information on other specialized procedures from primary sources. The chapter on retinal detachment is a concise and adequate presentation of a growing field. It is more than an uninspiring statement of different procedures; it is written with knowledge and critical sense. With so much that is satisfying it is regrettable that occasional defects, which could easily have been avoided, should mar the book. There is some looseness of style, and this is hardly balanced by elaborate tables on indications for different methods of operations. These tables give an air of finality which is most unreal. Some few statements are open to question; at any rate in this country cocaine is not used for infiltration anaesthesia. On the whole there is little in the teaching to which exception can be taken, and there are few operating surgeons who would not derive both pleasure and useful information from a perusal of this book.

THE PSYCHOLOGY OF AGGRESSION

Frustration and Aggression. By John Dollard, Leonard W. Doob, Neal E. Miller, O. H. Mowrer, Robert R. Sears, in collaboration with Clellan S. Ford, Carl Iver Hovland, Richard T. Sollenberger. (Pp. 209. 9s. net.) London: Oxford University Press. 1939.

In the foreword to *Frustration and Aggression*, a book published for the Institute of Human Relations by the Yale University Press, there is the surprising statement that "it is no wonder that co-operative research is unpopular in our scientific culture." From this side of the Atlantic it seems, on the contrary, that nothing is more popular in America than such research, or, at any rate, than the publication of its results jointly by a vast number of authors and associated persons. The volume now under notice has required only the relatively modest number of five authors and three additional collaborators. It is, nevertheless or therefore, a very good book, and is particularly illuminating in present international circumstances. The thesis that frustration has a causal relationship with aggression is not new and has been clearly stated by Freud and others. This book consists partly of a systematic and formal elaboration of this hypothesis and partly of a large amount of new illustrative material. It perhaps goes a little further than the previous statements in maintaining that frustration is *always* followed by aggression: to this end the connotation of the latter word is a little unduly extended. The necessary definitions are first given and the psychological principles concerned stated. Then applications are made and illustrations given in reference to American social conditions, especially in relation to children; to the problems of adolescence especially as relating to sex; to criminality; to governmental action under its different forms; and to a primitive society (the Ashanti). The chapter on "Democracy, Fascism, and Communism" is appropriate, clear, illuminating, and suggestive. The publishers claim that "its scope and implications should make it a significant book to anyone seriously concerned with the problems of human relations," and this claim is justified.

Notes on Books

The 1940 edition of *Who's Who* makes its appearance well ahead of Christmas, and contains more than forty thousand brief autobiographies of living men and women within the familiar scarlet covers. The pages of biographical material number 3,532, and there are well over a thousand new entries, replacing those omitted on account of death during the past year. *Who's Who* is indispensable in all libraries, clubs, institutions, and large offices, and is often turned to in private houses that are well provided with books of reference. Every sphere of public activity is covered, with medicine and the sciences well represented. The publishers are Adam and Charles Black, and the price in stout buckram binding is 63s.

The revised fifth edition of Professor JAMES YOUNG'S *Textbook of Gynaecology* continues to be a bargain at the modest price of 16s. (A. and C. Black, Ltd.). It contains a rich store of information which for the most part has been carefully selected and so arranged as to be of the maximum value to students and practitioners. The biggest defect is still to be found in the references to operative work, although these constitute but a small section of the book. Inadequate details are given of those minor procedures, such as dilatation and curettage and tubal insufflation, which are often performed by practitioners, while unnecessary space is devoted to manœuvres such as interposition and the Alexander Adams operations, which are seldom performed by the specialist. The author still appears to prefer the bare finger to the gloved one when making vaginal examinations, but gives no reason for the choice. Illustrations throughout are good and the book can be warmly recommended to all students of gynaecology.

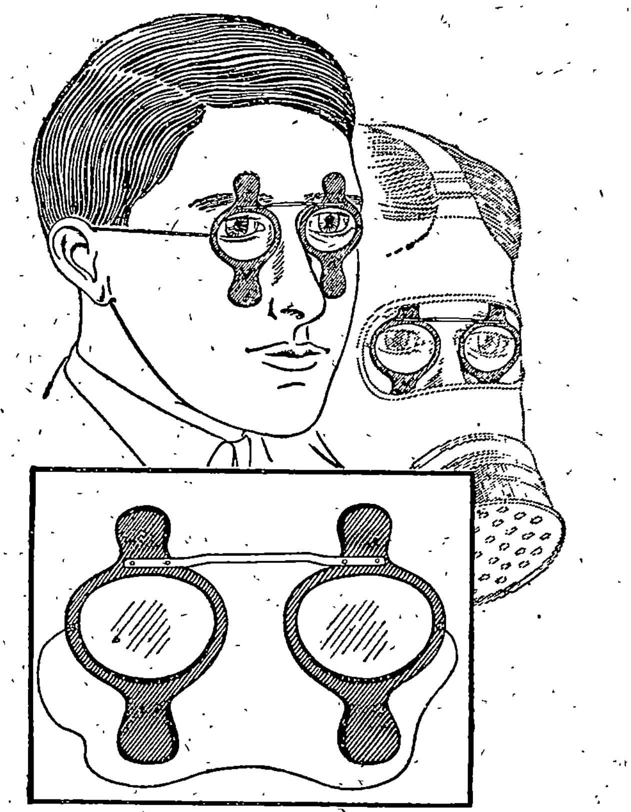
A new edition (the seventh within thirteen years) has been published of *Modern Methods of Feeding in Infancy and Childhood*, by DONALD PATERSON and J. FOREST SMITH (Constable and Co., 7s. 6d.). The importance of breast-feeding is again stressed and the views of Harold Waller are noted. The new designations of the various classes of milk are explained and the section on premature feeding has been revised. The food tables are brought up to date. Eight diet sheets from this book are now issued separately by the publishers at 9d. the set, with reductions for larger quantities of single sheets.

Preparations and Appliances

A SPECTACLE FRAME TO WEAR UNDER THE CIVILIAN GAS-MASK

Dr. MARGARET DOBSON (London, W.) writes:

The spectacle frame shown in the accompanying figure is made of celluloid and the eye-pieces are held together by means of a rigid bar, which does not touch the root of the nose. Two small pad extensions from above and below the middle of the lens rims act as supports and can be adjusted to any face by means of the bar. The upper support rests upon the frontal bone above the eyebrow, while the lower pad rests upon the prominence of the malar bone. The frame is kept in place by means of very fine easily compressible elastic, which is attached to holes in the outer rims of the frame.



The elastic passes over the ears and under the chin, so that the head straps of the gas-mask cannot disarrange the spectacle frame while being worn. The frame is made by Theodore Hamblin of 15, Wigmore Street, W.1.

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RECENT PROGRESS WITH VITAMIN K

A year and a half ago[1] we summarized the steps which had led to the recognition of vitamin K and the appreciation of its value in the haemorrhagic tendency of jaundice. First Dam and his co-workers observed that when chicks are fed on a diet deficient in certain fat-soluble compounds but otherwise adequate they develop a haemorrhagic state which is apparently due to a fall in the amount of prothrombin in the plasma. Next it was found that alfalfa grass and fish meal were especially rich in the curative factor or *Koagulationvitamin* (abbreviated to vitamin K), and oily concentrates and finally highly active crystalline products were obtained from these sources. The concentrates were somewhat unstable; they required biological standardization, which is always a tedious and uncertain process; and generally they could be given by mouth only. In patients with jaundice oral therapy necessitates the simultaneous administration of bile salts or the fat-soluble vitamin is not absorbed, and it is not always well tolerated. There were therefore strong practical incentives for the isolation of the pure vitamin, but one cannot read the subsequent progress without marvelling at the wonderful research machine which the biochemists have created. The story is brought up to date in a recent article by Koller.[2] Concentrates of vitamin K showed a characteristic absorption spectrum identical with that of the naphthoquinones, and it was soon found that vitamin K belongs to the group of the naphthoquinones and contains in addition phytol. The quinones readily take up hydrogen to form hydroquinones, and in this way they can play a part in the oxidation-reduction processes of the organism, though it is not yet clear how this influences the mechanism of blood coagulation.

Vitamin K resembles vitamin E inasmuch as it consists of a naphthalene derivative linked to the complex alcohol phytol. Another point of resemblance is that both are representatives of a group of substances of similar though variable activity. The vitamin K effect occurs in a whole series of naphthoquinone derivatives, even those without a phytol linkage, and it is not yet clear in what exact form or forms the natural vitamin exists. The first pure preparation to be used in man was phthiocol (2-methyl-3-hydroxy-1:4-naphthoquinone). Phthiocol was isolated in 1933 from the pigment of the tubercle bacillus by Anderson, who supplied synthetic phthiocol for the experiments at the Mayo Clinic.[3] It was administered to ten patients with jaundice and hypoprothrombinaemia—in nine intravenously in doses of the order of 50 mg. and in one by mouth. The clotting time returned to normal in twenty-four to forty-eight hours and haemorrhage was controlled. Phthiocol has also been successfully given intravenously to two women with jaundice by Smith and co-workers,[4] who used doses of the order of 20 c.cm. of a 0.2 per cent. solution. Both patients were afflicted with nausea and vomiting, and attempts to give the vitamin by the oral route had failed. A series of American chemical papers[5] suggests that phthiocol is the simplest member of a homologous series of anti-haemorrhagic substances, and that nearly all of the derivatives of 1:4-naphthoquinone show vitamin K activity. 2-methyl-1:4-naphthoquinone and the related 2-methyl-1:4-diacetyl naphthoquinone were successfully employed in man by Koller. Having found that a dosage of 60 mg. per kilo was tolerated by dogs, he treated six human cases of obstructive jaundice with a dosage of 3 mg. per kilo by mouth, and restored the coagulation of the blood to normal in all. Vomiting occurred in three of the patients. He concludes that methyl-naphthoquinone is probably more effective than the natural vitamin. Methyl-naphthoquinone has also been used successfully in mothers in labour to increase the prothrombin content of the blood of the newborn child.[6] In our current number J. M. Macfie, A. L. Bacharach, and M. R. A. Chance (p. 1220) report experiments, unhappily interrupted by the war, in which methyl-naphthoquinone was administered not only by mouth but also intramuscularly as 0.5 per cent. solution in olive oil. Doses of the order of 5 to 10 mg. a day were effective and the prothrombin returned to normal in twelve to seventy-two hours. Most of the naphthoquinones are insoluble in water, and the final choice of the form of vitamin K most suitable for clinical use will probably depend on factors such as solubility, tolerance, and speed of action.

What, then, are the conditions in which the use of vitamin K may be indicated? Haemorrhagic states may result from an absolute deficiency of vitamin K or from a conditioned deficiency. Absolute deficiency is seen most characteristically in the infant, in whom it provides the explanation of the haemorrhagic disease of the newly born. The full-term infant usually has only one-sixth to one-third of the adult proportion of prothrombin, and premature infants have much less. In the most deficient babies the condition becomes manifest as a haemorrhagic state. The low prothrombin levels in infants can be raised by feeding vitamin K to the mother before delivery or to the infant directly after birth.[7] In infants with icterus gravis or the related anaemia neonatorum the haemorrhagic state is unusually frequent and persistent, and vitamin K then relieves the haemorrhagic state but not the anaemia or jaundice.[8] Direct deficiency in the adult is probably unusual, but Kark and Lozner[9] have described four patients who had eaten diets very deficient in fruit and vegetables in whom the prothrombin time was prolonged and in whom the oral administration of vitamin K without bile salts was followed by a prompt return of the prothrombin time to normal. Deficiency may be conditioned by failure of absorption of fat and therefore of the fat-soluble vitamin, or by hepatic insufficiency, for the liver appears to play an essential part in the process whereby vitamin K enables prothrombin to be synthesized. Deviation of bile from the intestine by obstruction or fistula may produce prothrombin deficiency and haemorrhage, but the most intense forms are found in cases in which long-continued obstruction not only prevents the access of bile to the intestine but also damages the hepatic parenchyma. Operation to relieve the obstruction may temporarily aggravate the symptoms, and hitherto death from post-operative bleeding has been greatly feared. It may be too sanguine to hope that the risk has been completely eliminated by the discovery of vitamin K, but the results need no exaggeration. Townsend and Mills[10] report ten cases of obstructive jaundice in which the plasma prothrombin levels were low and there was an abnormal tendency to bleed. Administration of vitamin K and bile salts by mouth restored the clotting time to normal, except for one failure in which no adequate explanation could be found, and no abnormal bleeding followed operation in those so treated. Haemorrhagic states associated with a diminished prothrombin content of the plasma probably occur also in all other varieties of steatorrhoea, both the idiopathic forms such as sprue[11] and the forms which are secondary to gross disease of the intestine, such as fistula, stenosis, granulomatosis, and obstruction.[12]

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[1] *British Medical Journal*, 1938, **1**, 1060.

[2] *Schweiz. med. Wschr.*, 1939, **69**, 1159.

[3] *Proc. Mayo Clin.*, 1939, **14**, 497.

[4] *J. Iowa State-med. Soc.*, August, 1939.

[5] *J. Amer. chem. Soc.*, 1939, **61**, 1923 et seq.

[6] *Johns Hopk. Hosp. Bull.*, 1939, **65**, 419.

Finally it must be emphasized that vitamin K is of no value in haemophilia, purpura, and intrinsic diseases of the blood-forming organs, or as a non-specific haemostatic. The chief indications are the haemorrhage of jaundice and the haemorrhage of the newly born, and its use for unsuitable purposes can only bring discredit on a valuable addition to therapeutics. The curve of publications on vitamin K is rising rapidly, and it is difficult to believe that the quality of the early work can be maintained at this rate.

EPIDEMIC ENCEPHALITIS

When von Economo and Wiesner described in 1917 a series of cases of encephalitis in Vienna with characteristic symptoms similar to those later, but independently, observed in France by Netter and in England by Hall the term "encephalitis lethargica" was coined. Subsequently, when the disease assumed epidemic proportions in Italy, Switzerland, and Denmark in 1920, and spread to Sweden, Finland, Great Britain, the U.S.A., and Russia, lethargy was by no means found to be a constant feature. When it was observed it was often evanescent and quickly replaced or interrupted by great excitability. Perhaps for this reason the Americans preferred to describe this form of encephalitis as "epidemic encephalitis," and it was to pursue investigations into it that a Commission came into being in 1927 by the generosity of Dr. William J. Matheson. The Matheson Commission has now issued its third report.[1] The American nomenclature has proved as inadequate as the European, for events have proved that more than one kind of encephalitis may become epidemic. Apart from the encephalitic form of poliomyelitis, transmissible entities of a similar but distinct character have come to be clearly recognized, including St. Louis type, Japanese B type, American Eastern and Western equine encephalomyelitis, Australian *X* disease, haemorrhagic encephalitis, post-vaccinal encephalitis, and encephalitis following some of the acute infectious diseases. Most of these are generally accepted as being caused by viruses. Several of them may become epidemic, and, indeed, outbreaks of the St. Louis type and Japanese B encephalitis have been even more sudden and sharp than those of encephalitis lethargica. Somewhat resembling this group of diseases are others less closely allied—for example, louping-ill (a virus disease of sheep), lymphocytic choriomeningitis,[2] and the infective polyneuritis known as the Guillain-Barré syndrome.

The Matheson Commission, set up to investigate one disease, thus finds itself concerned with many. References to original publications on all of them are to be found in the valuable and complete bibliography which occupies more than two-thirds of the present volume. The epidemiological contrasts between some of the forms of encephalitis are interesting. While encephalitis lethargica has been, with reasonable consistency, a disease of winter and spring and specially liable to occur in the temperate zones, both the St. Louis and Japanese B types favour warmer regions and have so far assumed epidemic form between July and October —that is, in the warm seasons of the northern hemisphere. Such outbreaks are usually preceded by abnormal heat and prolonged drought. Droplet infection, which sufficiently explains the spread of the lethargic form, has therefore seemed a less adequate hypothesis for these others, and the same attention in relation to them has been paid to food, water, and biting arthropods as in the case of poliomyelitis, with results almost equally unconvincing. Some Japanese workers have satisfied themselves that mosquitos may transmit the viruses of both Japanese B and St. Louis encephalitis, but the circumstances attendant upon epidemics, and especially the quickness of their spread, are more suggestive of aerial transmission by numerous carriers or mild cases. There are differences, too, in the incidence and fatality of the several types. Encephalitis lethargica and Japanese B type are highly fatal, as measured by deaths among definitely ascertained cases; St. Louis type is less so and less attended by grave sequelae. While all three types increase in fatality with age, the 1933 St. Louis epidemic showed this feature most markedly, and both it and Japanese B type exhibit increasing incidence with advancing age, in contrast to the small variation usually observed in the age incidence of the lethargic form. These differences are in line with differences in the three viruses, which are distinct serologically and in the reactions they induce in laboratory animals.

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[7] *Johns Hopk. Hosp. Bull.*, 1939, 65, 138.
[8] *Lancet*, 1939, 2, 1157.
[9] Ibid., 1162.
[10] *Canad. med. Ass. J.*, 1939, 41, 111.
[11] *Med. Welt*, 1939, 13, 120.
[12] *Proc. Mayo Clin.*, 1939, 14, 407.

[1] *Epidemic Encephalitis*. Third Report by the Matheson Commission. New York: Columbia University Press; London: Humphrey Milford, 1939. Pp. 493. (19s.)

[2] For a summary of recent work on this disease see *British Medical Journal*, 1939, 2, 1001.

Gay and Holden, working for the Matheson Commission, have made a vaccine ("F" vaccine) by formalinization of a herpes virus which has now been under trial in the treatment of the lethargic form for about five years. Although its value is still unproved the immediate results in both acute and chronic stages of the disease are hopeful. Apart from this, the careful follow-up of cases by the Commission over a long period of years has revealed no other specific remedy, but the report deals fully with symptomatic treatment. Indeed, this publication gives a complete picture of encephalitis from the aetiological, clinical, therapeutic, and epidemiological points of view.

HYPERPARATHYROIDISM AND RENAL CALCULI

Hyperparathyroidism is a rare disease and to most clinicians it suggests a syndrome of weakness, lassitude, wasting, and muscular pains, which are associated with striking changes in the bones through cyst formation and decalcification and with the occurrence of spontaneous fractures. It is therefore rather surprising to learn that in a series of thirty-six cases studied by Chute[1] more than half the patients had as their predominating and presenting symptoms complaints referable to the urinary tract, and that in hyperparathyroidism the greatest danger arises from the renal complications. Renal calculi, which are usually multiple and bilateral, were found in thirty of the thirty-six cases. They may give rise to renal colic or may be complicated by pyelonephritis and cystitis, leading possibly to renal insufficiency. Other cases develop calcium deposits in the renal parenchyma, which, if extensive, may give rise to renal failure and uraemia, so that the case may present itself as one of advanced disease of the kidneys. These conditions no doubt result from the excessive excretion of calcium and phosphorus. Chute calculates that 3 per cent. of all cases of renal calculi are due to hyperparathyroidism, and the clinician should bear in mind this possibility when dealing with any case of stone in the kidney. Suggestive symptoms are weakness and constipation, thirst and polyuria, and pains in the bones and joints simulating arthritis or neuritis. In doubtful cases the fasting blood calcium should be estimated; a figure greater than 11.5 mg. per 100 c.cm. strongly suggests hyperparathyroidism. Sulkowitch[2] has described a useful test for indicating approximately the amount of calcium in the urine. An oxalate buffer mixture is added to an equal amount of urine which is acid to litmus paper or has been made so by the addition of 50 per cent. acetic acid. The test-tube is inverted and shaken, and the turbidity observed after two minutes. In cases of hyperparathyroidism the turbidity is very pronounced, whereas with the urine of patients whose calcium excretion is normal the cloud is much less dense. The specimen of urine should be taken while the patient is on a diet free from milk and anything else which might increase the excretion of calcium. Sulkowitch suggests that a negative result practically rules out hyperparathyroidism, whereas a positive test is strongly suggestive, though it should not be taken as final evidence. The reagent employed consists of 2.5 grammes of oxalic acid, 2.5 grammes of ammonium oxalate, and 5 c.cm. of glacial acetic acid dissolved in distilled water and made up to 150 c.cm.; 5 c.cm. of this reagent is added to 5 c.cm. of urine. In hyperparathyroidism a solitary adenoma of one gland is usually found, but in a few cases there is uniform hypertrophy of all the parathyroids. Johnson[3] points out that the relation between the parathyroids and the kidneys is further complicated by the fact that in cases of primary renal failure hypertrophy of the parathyroid glands is common, though symptoms of hyperparathyroidism do not appear. He gives a full report of an interesting case in which the patient complained of pain in the right hip, weakness, loss of weight, thirst, and polyuria. He had had a fracture of the right humerus a year before when throwing a ball, and *x*-ray examination revealed a cyst in the region of the fracture and multiple cysts in other bones. An adenoma of the right lower parathyroid gland was removed, the bone lesions healed, and the patient improved and returned to work. Symptoms of chronic nephritis gradually developed, however, and four years after the operation the patient's blood pressure was 210/120 mm. Hg and his blood non-protein nitrogen 66 mg. per 100 c.cm.; some months later he died of uraemia. A necropsy revealed enlargement of the remaining parathyroids and an extensively calcified horse-shoe kidney, the calcification occurring almost entirely in the renal pyramids. Microscopically there were large masses of calcium causing obstruction and disorganization of the collecting tubules. There was also pronounced sclerosis of the arterioles of the kidneys, pancreas, spleen, and adrenals, some of the vessels having undergone necrosis. The author discusses the possibility of this being a case of hypertension becoming malignant independently of the hyperparathyroidism, but as similar cases have been recorded in relation to parathyroid disease it is probable that the extensive renal calcification was the lesion causing the hypertension and the secondary vascular changes.

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[1] *J. Urol.*, 1939, **41**, 762.

[2] *J. Urol.*, 1937, **37**, 746.

[3] *Amer. J. Path.*, 1939, **15**, 115.

REACTIONS BETWEEN OVARY AND PITUITARY

It has been known for many years that hypophysectomy leads to ovarian atrophy, and that this can be prevented by the implantation of pituitary tissue. After this discovery gonadotrophic extracts were prepared from the pituitary and other potent sources—urine from the pregnant woman and serum from the pregnant mare. The earlier testing of such extracts was carried out largely on normal rats or mice. The observation of Selye, Collip, and Thompson[1] that extracts of pregnancy urine (chorionic gonadotrophin) when injected into immature hypophysectomized rats produced only luteinization, although provoking both follicle stimulation and luteinization when injected into normal immature rats, showed that the pituitary of the test animal seriously interfered with the results. Noble, Rowlands, Warwick, and Williams,[2] comparing the effects of numerous gonadotrophic extracts on normal and hypophysectomized immature female rats, found that in all cases the quantitative response in the latter was less than in the former. The qualitative differences were in some cases, however, even more striking. Whereas all the extracts gave rise to follicle stimulation and luteinization in the normal rats, those from the urine and serum of pregnant women and from the ox hypophysis were purely luteinizing, and those from certain human glands purely follicle-stimulating, in the hypophysectomized rats. Extracts from the pituitaries of sheep, horse, and pig, and from the serum of the pregnant mare, had both activities even in the operated animals. All this shows that the injection of follicle-stimulating gonadotrophin provokes the secretion of luteinizing gonadotrophin, and vice versa. It is difficult to determine whether these responses are elicited by the injected materials themselves or by the secretions of the ovary in its follicular and luteal phases. Large doses of oestrogen have an inhibitory effect on the pituitary, as is shown by Ruth Deanesly,[3] who has observed that implantation of oestrone or oestradiol tablets in male rats or mice leads to degeneration of the gonads and accessory sex organs. This is attributed to hypophyseal depression, since the growth rate is also diminished. Similar results have been obtained in rats of both sexes by Noble,[4] using stilboestrol tablets. He also demonstrated that the gonadotrophin content of the pituitary of the animals so treated was diminished. The qualitative aspects of this diminution are not yet established, nor are the similar aspects of the diminution produced by progesterone. It is apparent that the relations between ovary and pituitary are complex, and that complete replacement therapy in hypophysectomized animals will present great difficulty until the constituents of the gonadotrophic complex are separated in a physiologically pure state. The difficulty is exemplified in the work of Liu and Noble,[5] who find that, while the loss in ovarian weight from hypophysectomy can be arrested by daily injection of extract of pregnant mare's serum, the effect does not last and regression sets in after a few weeks in spite of continued injection. During the injection period the animals are continuously in oestrus, and although mating occurs pregnancy does not result. Injections of chorionic gonadotrophin had similar effects, though the regression in ovarian weight set in earlier and oestrus only persisted for a few days.

THE LAURENCE-BIEDL SYNDROME

Syndromes with many hereditary components have a special interest because of the mechanism of their association. Sometimes, as in the syndrome of brittle bones, blue sclerotics, and otosclerosis, a uniform embryological basis is available, for mesodermal structures only are involved. In arachnodactyly, however, an embryological conception breaks down, for the subluxation of the lens is due to a deficiency of the suspensory ligament, which is ectodermal in origin, whereas the other manifestations arise from defects of mesodermal tissue.[6] In the Laurence-Biedl syndrome there is an undisputed mixture of mesodermal and ectodermal defects. The obesity, hypogenitalism, and polydactyly are mesodermal disturbances, and the mental deficiency and the pigmentary degeneration of the retina are ectodermal. It is possible to hold that these various manifestations are secondary features of one underlying disturbance, and that the distribution in ectodermal or mesodermal tissue is accidental. Against this hypothetical approach there is considerable genetic evidence that a variety of manifestations may be the result of linkage within the same chromosome. It is thus that the bizarre combination seen in the Laurence-Biedl syndrome can best be explained. In 1935 Cockayne, Krestin, and Sorsby in an exhaustive analysis suggested that the syndrome was determined by two recessive genes in the same chromosome, and as the same recessive mutation in two neighbouring genes was unlikely to happen more than once they held that all cases of the syndrome probably had a common origin. This explanation must now be admitted as too simple, for in a new study of the subject Sorsby, Avery, and Cockayne[7] draw attention to cases reported outside the Caucasian race, particularly among Japanese. This makes the suggestion of common ancestors unlikely and leaves a distinctly difficult problem as to how such a variety of manifestations as are seen in the syndrome all arise from changes within one and the same chromosome. Hereditary lesions of the central nervous system associated with digital abnormalities have been produced experimentally by Bagg and Little, and Sorsby has shown the association of hereditary macular colobomata with digital defects in patients clinically. That there is indeed some close association between hereditary ocular anomalies and digital anomalies can also be seen from such conditions as arachnodactyly, syndactyly with aniridia, lobster-hand and aniridia, and the Apert syndrome. All this evidence suggests that it may be possible ultimately to map out the components of a chromosome that seems to contain, besides others, genes controlling development of the brain, eye, and the peripheral skeleton. That a chromosomal defect involving several genes underlies the Laurence-Biedl syndrome rather than one pathological lesion with secondary manifestations is made likely by the three post-mortem records of the syndrome now available. Nothing definite was found, though it must be admitted that the reports are not as conclusive as they might be, particularly in regard to the possibility of lipoid disturbances. Several other points of interest emerge from the present study. That adiposity need not be a constant symptom even in the same patient is shown by the fact that one of the patients described by the authors was distinctly obese as a child and is now thin. The variety of allied conditions listed and discussed in this paper emphasize how little is as yet known of the fundamental nature of syndromes with many components and of the interrelations between them.

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[1] *Endocrinol.*, 1933, **17**, 494.
[2] *J. Endocrinol.*, 1939, **1**, 22.
[3] Ibid., 36.
[4] *Lancet*, 1938, **2**, 192.
[5] *J. Endocrinol.*, 1939, **1**, 15.
[6] *British Medical Journal*, 1937, **2**, 22.
[7] *Quart. J. Med.*, 1939, **8**, 51.

TUBERCULOSIS IN YOUNG ADULTS

The optimism often expressed as to the trend of tuberculosis in this country has not been shared by those workers who have examined mortality statistics for this century with more than a superficial glance. For while the mortality for most age groups in England and Wales has declined steadily since 1870, except during the war period of 1914–18, the mortality for young adults, which had declined satisfactorily until the beginning of the present century, has shown a retardation for young women since 1900–4, and for young men since 1912–14. This retardation has been particularly severe amongst young women, whose mortality in 1931–3 was scarcely lower than it had been in 1901–3. Moreover, the retarded decline in mortality from respiratory tuberculosis among young adults has been most serious in the large urban areas of the country. Actually at the present time nearly half the deaths from all diseases among women are due to pulmonary tuberculosis. Up to now attempts to explain this phenomenon have been little more than mere conjecture. In a report recently published[1] Dr. D'Arcy Hart and Professor Payling Wright present an elaborate and carefully worked out statistical study of the possible responsible factors, paying particular attention to social conditions. The trend of mortality from respiratory tuberculosis for England and Wales as a whole, especially that for young adults, is considered in relation to the changes in the general level of social conditions (standard of living) as estimated mainly from changes in real earnings. The experiences in phthisis mortality in the different English county boroughs are then considered in relation to the local variations in their social conditions as estimated from poverty and housing data; and as a control for the results arrived at the death rates from diseases other than respiratory tuberculosis are considered in a similar way. The possible distorting effect of "internal migration" upon the relations between the above mortalities and certain social conditions in the different county boroughs was borne in mind, and an attempt is made at correction for this effect for young women. Again, particularly in young women, the effects of recent changes in the volume of occupation upon respiratory tuberculosis are considered. And, finally, the mortalities from phthisis in the different London boroughs are examined in the light of social data, some of which are, and some of which are not, available for the county boroughs. In the last chapter the more important findings under the headings just given are discussed in relation to one another. In a short note it is clearly not possible to attempt even a brief summary of the authors' findings. Everyone connected with the social or public health aspects of tuberculosis must study the report himself. The general conclusions can, however, be stated. It is suggested that the retardation in tuberculosis mortality among young adults has been brought about by (*a*) a predisposing factor—that is, the special sensitiveness of young adults to social conditions as regards their mortality from respiratory tuberculosis; (*b*) general determining factors—that is, the contemporaneous country-wide changes in general, social, and economic trends affecting the mortality from respiratory tuberculosis in young adults in all areas, the most important of these changes being the check to the rise in the standard of living occurring about 1900, which was accompanied by a setback in the improvement in general housing conditions, and the accentuated increase in the industrial employment of young women also taking place about that date; (*c*) local determining factors—that is, unsatisfactory social conditions rendering the effect upon the young adults in certain localities especially severe. Of these local conditions housing appears to be of great importance, the part played by other factors in poverty being less clear, though there is some evidence from the London boroughs that inadequate nutrition has also played a part.

It has not been possible yet to settle the date and place of the meeting of the next annual congress of the International Association of Cosmobiology postponed from last September owing to the outbreak of war. The proposed places are Rome, Barcelona, Geneva, or Antwerp. The official representatives of Governments and of contributing learned societies are asked to send notification of any changes of address to the general secretary of the International Association, Dr. M. Faure, Rue Verdi 24, Nice. The *Revue de Cosmobiologie* continues to be published at present in the more convenient form of separate pamphlets.

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[1] *Tuberculosis and Social Conditions in England, with Special Reference to Young Adults.* By P. D'Arcy Hart, M.D., F.R.C.P., and G. Payling Wright, D.M., M.R.C.P. London: National Association for the Prevention of Tuberculosis. (3s.)

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

FRACTURES OF THE SHAFTS OF THE TIBIA AND FIBULA

BY

ARTHUR ROCYN JONES, M.B., F.R.C.S.

When considering the fracture of a long bone, the position and the nature of the break in continuity are frequently determined by the structure of the bone. A broken tibia often illustrates this relation between fracture and structure. The upper third of this bone is thick and prismatic, but the lower two-thirds becomes increasingly thinner until near the lower end, when some expansion again occurs to form an articular surface of the ankle. It is the lower slender part of the tibia that is most frequently broken, and here, too, is one of the well-known sites for non-union of a skeletal fracture. Furthermore, the whole length of the inner surface of the tibia lies immediately beneath the skin, and there is thus a greater liability for a fracture of this bone to become compound than is the case with most bones. Fractures of the bones of the leg may arise from direct or indirect violence, the severity and nature of which will decide whether one or both bones are broken and also the particular variety of fracture inflicted. Direct violence, such as that of a crushing force applied to the limb, usually produces a transverse fracture, and very often with comminution. On the other hand, indirect violence, such as occurs when falling from a height, as a rule causes severe twisting of the leg with the foot momentarily fixed on the ground. The fracture which follows such a torsion strain is either oblique or spiral in character. Comminution may occur with all varieties, and frequently there is a detached triangular piece present, the so-called "butterfly fragment." Again, the tibia, whether broken alone or in company with the fibula, is almost invariably severed in its lower two-thirds; if both bones suffer the fibula is fractured at a higher level than the tibia.

The more severe the injury the easier the diagnosis. A simple fissured fracture of the fibula may readily escape detection except by radiographic examination in two planes. Clinically there is local tenderness at the site of bone injury accompanied by some swelling due to extravasation of blood, and lateral pressure on the fibula either above or below is painful at the fracture. But a person with a broken fibula may be able to walk without great discomfort, and this fact is very disarming to the unwary. A fracture of the tibia, on the other hand, is at once disabling. There is local pain and swelling at the point of injury, and if the examining fingers follow the crest of the tibia from above downwards a sudden interruption is experienced at the fracture and the lower end of the upper segment can be felt. These signs are enough to diagnose a fracture without recourse to the eliciting of crepitus or of abnormal mobility at the break. The obtaining of the last two signs is inadvisable, for they can only be secured with pain to the patient and some risk of disturbing what may be a reasonably good alignment of the fragments. A fracture of both bones presents no difficulty of diagnosis: the grave disability, the angular deformity, and the great swelling of the parts are only too obvious.

Treatment

Once the clinical diagnosis of a fracture of one or both bones of the leg is made the protective treatment of the fracture should begin, without waiting for an *x*-ray examination. Neglect to protect the injured leg during transport from the scene of the accident may have irreparable consequences. Fractures of both bones in their fresh state may present the fragments in good anatomical alignment, but if left unprotected these may easily become so disturbed by the time they reach the *x*-ray table that their realignment may baffle the skill of the most experienced. It is important, therefore, that these fractures be protected on the spot; for this early splinting may well be the most important step of all, in spite of whatever procedure may follow. In a fracture of the fibula alone the uninjured tibia acts as an adequate splint. For a broken tibia the uninjured fibula is something of a protection, but it is safer to adopt the plan that is recommended where both bones are broken, which is as follows. The leg should be supported by an assistant, while the foot is then brought up to right angles with the leg and some traction applied. With the leg in this position, a padded box splint, with foot-piece, is bandaged to the limb. If only one side splint is available it should be applied to the outer side of the injured limb, and then both lower limbs should be tied together at the feet, ankles, mid-calf, knees, and thighs. Even if no splint is available the limb should be tied as indicated.

As soon as possible the radiographs should be taken in two planes, and the whole tibia and fibula examined to avoid missing any undetected fracture at some distance from the main injury. A skiagram alone will reveal the true nature of the fracture, and by indicating the disposition of the fragments will serve to point out what the right line of treatment should be.

Fracture of Fibula Alone

Fractures of the shaft of the fibula are rarely of great importance, for the body weight is transmitted almost entirely by way of the tibia. Sometimes, however, a fracture of the neck may be accompanied by injury to the external popliteal nerve, with consequent drop-foot paralysis; but as a rule the paralysis is only temporary, although it may take some months to recover. An absolute irreparable paralysis is excessively rare. Fracture of the lower end of the shaft may be part of a Pott's fracture and should be treated as such. With an intact tibia there is usually no gross displacement of the segments of a fractured fibular shaft. The fracture is best treated in a plaster-of-Paris cast. Stockinet is put on the limb, and the slightly inverted foot is held at a right-angle to the leg and manual traction exerted; by this means displacement of the fragments will be corrected. While the foot is thus held under traction the plaster is applied direct to the stockinet from the toes to just below the knee and without any wool or felt padding. A walking-iron, preferably with a rubber disk for comfort, is incorporated in the cast, taking care that the iron lies in the axis of the leg and is not tilted forward below the sole of the foot (Fig. 1). Lastly, the edges of the stockinet at each end are folded back and are fixed in the cast by the turns of the last plaster roll. When the cast is dry and well set, walking may begin with the aid of a stick. The plaster may be removed in three to four weeks, for by then there is usually enough callus present to keep the segments immobile.

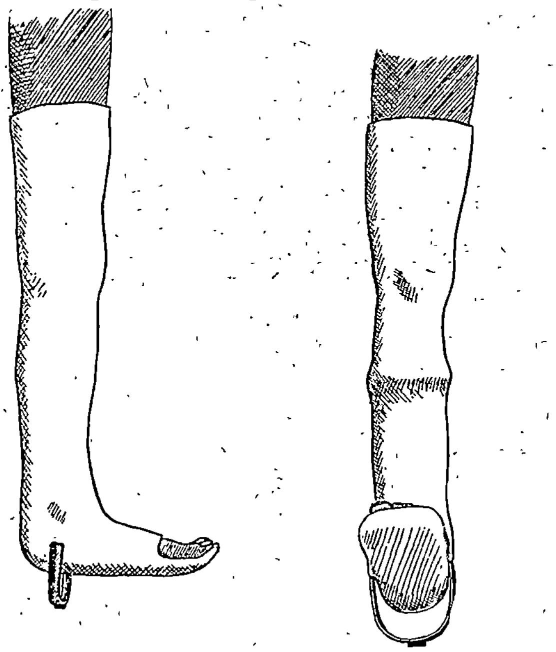

Fig. 1.—Plaster cast with walking-iron incorporated.

Fractures of Tibia Alone

A fracture of the tibia is completely disabling, and reduction should be attempted without delay. It is much easier to reduce displacement during the first few hours while the muscles are relaxed than it is after a day or two when the exudation has increased and the muscles are more resistant. The anaesthetic should be such as will produce complete relaxation of the limb. The knee is first held flexed at nearly a right-angle, and traction and counter-traction are employed, with lateral pressure on the fragments if necessary. Should this procedure fail, then deliberate angulation of the fragments with traction and counter-traction may succeed in bringing the ends together. If this occurs the leg is straightened, bringing the fragments into alignment. Care, however, must be taken to avoid thrusting the sharp end of a fragment through the skin. The result should be checked by the fluorescent screen, and if unsatisfactory the manipulation should be repeated. When good reduction has been obtained the limb should be encased in a plaster cast on stockinet from the toes to the groin, and a walking-iron incorporated; but it is a good precaution to make two or three longitudinal slits in the front of the cast so that it can be prised open a little if the patient complains of undue discomfort some days later. A radiograph in two planes should be taken as soon as the plaster is dry, and again a week later. In spite of every care the fragments sometimes change their position even in the cast, and this is due to the fact that with the absorption of the exudate and the diminution of the swelling the plaster does not grip the limb so well as when first applied.

There are three things in particular that must be watched: that there is no angulation at the fracture; that the articular surface of the tibia at the ankle is horizontal; and that the foot is at a right-angle to the leg. The avoidance of angulation is of more importance than end-to-end apposition, provided the axes of the tibia and fibula are parallel. Permanent angulation or obliquity of the articular surface will mean future ankle strain, with a weak foot in a valgus or varus attitude, and a foot fixed in plantar flexion may lead to contraction of the tendo Achillis. If there is angulation of the fracture it must be corrected forthwith by removing the plaster, manipulating the leg, and applying a fresh cast. An alternative method is to remove a wedge from the cast on the side to which the angulation is pointing and continue the narrowing slit around on either side for two-thirds of the circumference of the cast. The angulation can then be corrected by approximating the edges of the gap left after the plaster wedge has been removed; but this should be checked by the *x*-ray screen. If the deformity is abolished fresh plaster should be applied to close the slit and bind the cast. The plaster should be kept on the limb for eight to ten weeks or even longer, according to the severity of the fracture. But before walking is permitted a radiograph should be taken to determine whether sufficient consolidation of the callus has occurred.

If the fracture resists manual reduction, or if there is a persistent separation of the segments in spite of all attempts to approximate them, then it is probable that muscle is interposed between the fragments or the intact fibula is obstructing reduction. In these circumstances it is best to explore the limb by open operation, reduce the fracture, and maintain the reduction securely with a metal plate. This procedure will be safer if the "no touch" technique be observed throughout.

Fractures of Tibia and Fibula

Fractures of both bones are more disabling and far more difficult to treat than the fracture of a single bone. They are usually the result of greater and longer-continuing violence, so that the displacement and comminution of the fractures and the injuries to the soft parts are more serious. The attitude of the leg is characteristic: there is anterior bowing at the fracture, due to the upward pull of the quadriceps on the upper fragment and the retraction of the lower fragment by the tendo Achillis. The treatment of these fractures will depend upon the amount of displacement, overlapping of the fragments, and whether there is any muscle interposed between the ends of the bones.

MANUAL REDUCTION AND FIXATION BY PLASTER CAST

In attempting manual reduction of fractures of both bones the same principles obtain as described for fracture of the tibia alone; also, checking by fluorescent screen and by subsequent radiographs must be followed in similar manner. If the reduction is satisfactory and the alignment of the fragments correct, a plaster cast, with incorporated walking-iron, should be applied to keep the bones fixed in position. There is, however, a greater liability to displacement of the fragments under the plaster than in the case of a patient with only a tibia broken. It also takes a week or ten days longer to get these patients walking in the plaster.

REDUCTION BY DISTRACTOR AND FIXATION BY PLASTER CAST

If the attempt at manual reduction fails, or if at the outset it is felt that the overlap or displacement is such that there is little prospect of success by manipulation alone, reduction by a distractor should be undertaken. There are a number of good distractors available for the reduction and fixation of these difficult fractures of long bones. With aseptic precautions a sterilized stainless-steel pin, 4 mm. thick, is passed through the tibia above the fracture and another pin through the lower end of the tibia or through the posterior part of the os calcis. The pins are then connected to the appliance. Traction and counter-traction are made by screw adjustment, and, with the aid of some manual adaptation of the fragments as well, a good anatomical reposition of the broken bones can be obtained in almost every case. The procedure is best carried out with the help of the x-ray screen, for by this means the right amount of distraction necessary can be accurately estimated. When correct reposition of the segments has been obtained the apparatus alone will maintain the fixation (Figs. 2–4). To prevent infection occurring between skin and pin, it is a good precaution to smear bipp around the pin at its emergence from the limb and apply a strand of sterile gauze over the paste. A strip of thin felt is next applied to the outer side of the leg in the lower third, and this passes down over the external malleolus, under the heel, and upon the inner side to well beyond the internal malleolus; this felt gives protection to the bony prominence in the region of the ankle. The plaster is then applied direct to the skin and over the thin felt, from the toes to the upper part of the thigh, and when the cast is dry the distractor is removed, leaving the pins in the limb. At the end of ten days walking with crutches may begin, and later on sufficient aid will be derived from a walking-stick. Pins and plaster should be removed in eight weeks. If there is enough consolidation of the fracture, walking may be allowed without the cast; but if the union of the fracture is weak, or if there is pain, a fresh cast with walking-iron should be applied for another three or four weeks. The rate of consolidation depends upon the severity of comminution, the state of health, and the age of the patient.

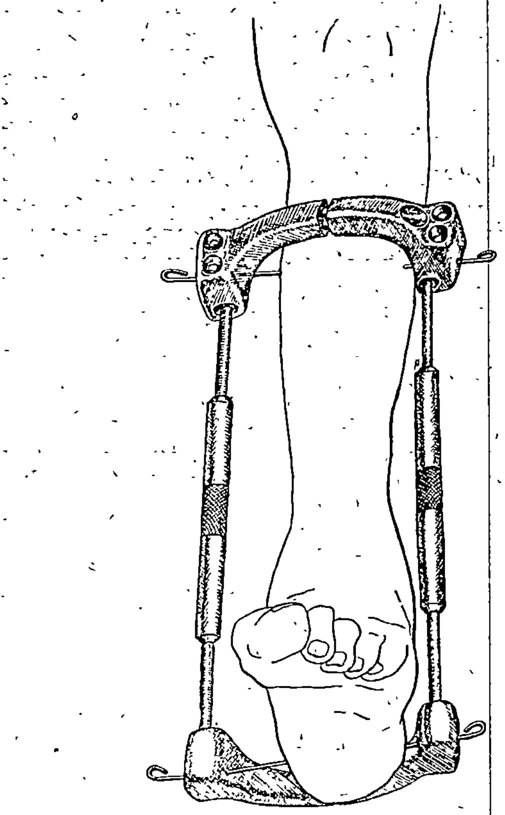

FIG. 2.—A leg with a severely comminuted fracture-dislocation of the lower third of the tibia and fibula. Cuendet's distractor is shown attached to pins transfixing the tibia and os calcis after reduction and fixation of the fragments.

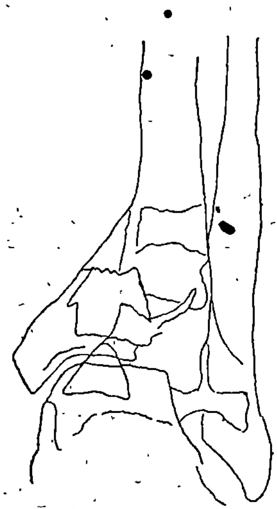

FIG. 3.

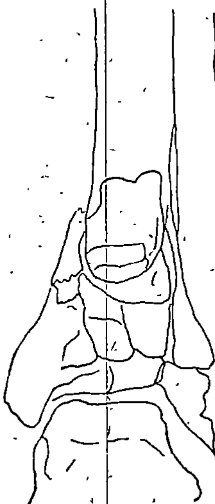

FIG. 4.

FIG. 3.—Tracing of a radiograph of the case illustrated in Fig. 2, before treatment.

FIG. 4.—Tracing of a radiograph of the same case after reduction and fixation of the fragments by the distractor.

Delayed union is apt to follow severe comminution, and particularly if loose devitalized fragments are present. In such cases firm union may not occur for four months or even longer, and demonstrable x-ray consolidation not for five to six months. Again, some may require the protection of a walking-calliper for a while after the plaster cast has been discarded; this particularly applies to the elderly heavy patient with a severe fracture in the lower third of the tibia. Angulation is apt to occur in this type of case even when clinically there is apparent consolidation and immobility of the fragments. Fractures in young children, on the other hand, usually heal soundly in six to eight weeks. All patients after discarding plaster casts should have physiotherapy treatment, directed to improve muscle tone and to get rid of knee and ankle stiffness.

SKELETAL TRACTION AND SPLINTING

Another method of treating fractures of both bones of the leg is by skeletal pin traction combined with a Thomas or Braun splint. A Kirschner wire is inserted through the posterior part of the os calcis and tightened and clamped in a stirrup. The wire can be inserted under local anaesthesia: about 2 c.cm. of a 2 per cent. solution of novocain is injected under the sterilized skin and down to the periosteum of the bone at the point of proposed entrance of the wire. The latter is then driven through the os calcis until the skin begins to bulge on the opposite side. A second injection is now made about the exit of the pin from the bone and afterwards the pin is pushed out through the skin. The limb is placed in a Thomas bed calliper, which is bent to an angle of 45 degrees at the knee and suspended from pulleys attached to an overhead frame; the stirrup is attached to a cord which passes over a pulley, at the foot of the bed, to a weight of 12 lb. or more, according to the amount of traction required to overcome the displacement of the fragments, as indicated by the radiographs. Good correction can be obtained by this method, but it is open to the objection that the patient is kept recumbent, the fracture is not sufficiently immobilized, and there is a tendency towards delayed union. The method is, however, of great value in compound fractures or where it is necessary to keep the state of the limb under observation for trophic or other reasons. In some cases where it is desirable to begin the treatment in a Thomas splint it may be possible, after two or three weeks, to incorporate the limb in a plaster cast.

Compound Fractures of Tibia and Fibula

Compound fractures are a special problem, and they vary from one or two punctures of the skin to complete destruction of the limb, for which amputation is the only remedy. Every compound fracture must be presumed to be potentially infected, and therefore protective inoculation ought to be instituted at once; 1,000 units of antitetanic serum (500 American units) should be given subcutaneously and 4,000 units of gas-gangrene antitoxin intramuscularly. The treatment of the wound will depend on the degree of damage to the soft tissues. Puncture wounds are best left alone and watched; if suppuration occurs free drainage should be provided. Where there are laceration and some devitalization of the part the soiled tissues and skin involved should be excised (débridement). If the skin edges can be brought together without tension this should be done; but if it is not possible the wound should be packed with pure flavine and gauze. Should the wound eventually suppurate flavine and glycerin with gauze packs had best be employed and the leg dressed daily. If there is good alignment of the fragments the limb might be encased in plaster from the toes to the groin and a generous window provided for dressing. If a cast is not possible, or if it is necessary to employ skeletal traction, the limb is best nursed on a Thomas splint. Many compound fractures do well under this treatment, although union of the fragments is delayed. A sinus, however, may persist for several months, the healing of which often follows the shedding of a superficial sequestrum. Very often compound fractures require some calliper protection during the early stages of walking.

Where amputation is inevitable it is best in the early case to amputate through the fracture and provide adequate drainage from the beginning. This procedure, rather than a higher amputation, diminishes the shock, and ultimate healing is often so satisfactory that a secondary amputation for limb-fitting is unnecessary.

In other cases a more conservative attitude may be justified, and by efficient drainage, antisepsis, and possibly administration of sulphanilamide, an unpromising limb may be saved. But if in spite of such treatment there is commencing retrogression with the limb red, swollen, and oedematous, a slowly ascending inflammation and a patient very ill, then amputation becomes a life-saving operation. Even in this type of case amputation at the fracture with very free drainage may be quite enough. But if not enough it very often suffices to tide a patient over a crisis, and a secondary amputation can be planned later with a good prospect of success.

The nineteenth annual report of the National Institute of Industrial Psychology (Aldwych House, W.C.2) records important work of both industrial and educational interest. It is to be hoped that the information the Institute has accumulated and the experience it has gained since its foundation shortly after the last war will be utilized to the full in the present emergency. The section of the report dealing with industrial investigations shows the wide variety of problem with which the investigators are accustomed to deal. Particularly good results are reported in simplifying methods of work and in devising training schemes for new employees. A large part of the Institute's work is concerned with vocational and educational guidance. There was a marked increase in the number of young men sent for testing and interviewing by firms employing or proposing to employ them and in the number of boys and girls dealt with in groups at their own schools. This advisory service is still available, and to meet the needs of school-leavers who have been evacuated the Institute is prepared to send members of its staff to schools in the country.

"THE APPOSABLE THUMB"

SIR WALTER LANGDON-BROWN'S LECTURE

Under the title of "The Apposable Thumb" Sir Walter Langdon-Brown discoursed in his Thomas Vicary Lecture at the Royal College of Surgeons on November 30 on the history of craftsmanship in medicine and the rise of surgery to its proper place. The subject took him to the origin of schools of learning and universities, the separation of philosophy from handicraft (of which the separation of medicine from surgery was a phase) and the intellectual conflicts of the Middle Ages. The lecture was attended by the Presidents of the Royal Colleges of Physicians and of Surgeons and a distinguished company.

The lecturer began his history in almost the darkest of the dark ages, when Theodore of Tarsus arrived in England in 669. Although he was 66 years of age, he proved himself an active reformer and founded a school of learning at Canterbury, at which school our written literature in English may be said to have had its birth. A few years later the monastery at Jarrow associated with the Venerable Bede was consecrated. Jarrow must have been an oasis of civilization in those times. This in turn led Egbert to establish his cathedral school at York. Thus, if one went back far enough, Britain could claim to have planted the seed from which sprang the mediaeval universities. The very names of those universities affected one with a kind of nostalgia—Salerno, Bologna, Paris, Salamanca, Oxford, Padua. They were not founded, but just grew out of the sudden passionate desire for learning in the twelfth century, wandering scholars flocking hither and thither as the reputation of some teacher waxed and waned.

The word *universitas* originally signified not a *studium* or school but a guild formed for self-protection either by teachers or students. A university was and still remained an intangible thing. He sometimes wondered what would happen if a man arrived at Cambridge station and asked a taxi-driver to take him to the university. It would be like arriving at Victoria and asking to be driven to the British Constitution. The rise of Oxford was one of the results of the quarrel between Henry II and Thomas à Becket. As the clergy naturally sided with the archbishop the king ordained that no cleric should cross the Channel except by his permission and that clerics abroad should return or lose their livings. The result was that, exiled from Paris, they crowded in the little *studium* at Oxford. In 1209 the feud between town and gown ended in masters and students three thousand strong deserting Oxford for Cambridge and Reading, and when the quarrel was settled in favour of the university many of the migrants remained in Cambridge, though Reading had to wait until the present century to get its university.

The Ascendancy of Scholasticism

It was Hugh de Balsham, Bishop of Ely, who first took steps to introduce the collegiate system into universities, though for the beginning of the system one must go to Paris. By the middle of the thirteenth century the majority of middle-class students were living in halls under the control of masters. These halls largely disappeared or were absorbed by the colleges, though this absorption was more gradual at Oxford than at Cambridge. Hugh de Balsham founded Peterhouse at Cambridge in 1284, and between 1324 and 1352 seven new colleges at Cambridge came into existence. King's College was founded in 1441 and Queens' a few years later. "It is a strange madness," said Petrarch, "this desire ever to be sleeping in a strange bed," but now the wandering scholars were settling down.

The lecturer next traced the rise of authority in the Middle Ages and the ascendancy of scholasticism which kept control until the Renaissance. He asked what was the attraction of scholasticism to the human mind. It was an attempt to push reasoning by the apparatus of logic to its utmost extreme. This was not an atmosphere in which science or medicine could flourish, though an age which had seen many able minds completely subservient to "the gospel according to Karl Marx" had little reason for sneering at scholasticism. In early times, before the universities existed, the art of medicine was practically controlled by the Church. Even at that early stage any kind of craftsmanship in medicine was looked at askance. It was becoming fashionable to denigrate the Renaissance, but so far as medicine was concerned things were in a far worse state before this rebirth. The universities of Europe, many of which had started as rather revolutionary, anti-clerical institutions, gradually became exclusive. Papal influence seemed to vary directly with the distance of the university from Rome—for example, Paris was more under the papacy than any Italian university. What was it that saved medical science during the two centuries after the death of Frederick II, that liberal patron of Salerno, in 1250? The answer was surgery, which the physicians tried to repress. The lecturer gave an amusing account of the conflict in the University of Paris over the effort to exclude all who worked with their hands. When the surgeons secured the right to attend the lectures, though degrees were denied them, their opponents countered the move by admitting barbers, to which the other side retorted by requiring all lectures to be in Latin, which the barbers could not understand, but this was met by giving the lectures once in Latin and a second time in French!

A Slowly Opening Door

But the Renaissance was at hand. Its harbinger in England was Erasmus, who represented that sort of compromise for which the English were now renowned. The year 1511, when Erasmus was at Cambridge, was an important date in the history of surgery. Those who practised surgery were required to be licensed after due examination. In 1518 the Royal College of Physicians was founded with Linacre as its first President. In 1540 the regius professorship was established. With such a start as this it was disappointing to find how little was achieved. William Harvey made his great discovery, but in fact it had little influence upon the practice of medicine in the seventeenth century. More important than his discovery was his introduction of the experimental method. But the progress of clinical medicine showed an extraordinary time lag. The door that had been opened was not entered at once, and Harvey's injunction to seek out the secrets of Nature by way of experiment was only falteringly followed. The severance between medicine and surgery was maintained by the cleavage between philosophy and craftsmanship.

Gradually, however, during the seventeenth century observation, reason, and experiment penetrated into medicine, modifying somewhat the influence of authority. Two chief aspects in the study of disease became more clearly defined—laboratory experiment and clinical observation—though like two brethren united by a common tie they were apt to disagree. Sydenham was more influenced by the systematic botany of Linnaeus than by the experimental physiology of Harvey. He considered that the first task of the clinician was to reduce diseases to certain definite species. This was the indication of another concept which had continued to be affirmed, denied, and reaffirmed—namely, the entity of disease.

Two events which influenced the practice of medicine were the invention of percussion by Auenbrugger and of the stethoscope by Laennec. From these humble beginnings the whole science of physics obtained an introduction into medicine. Physicians became no longer ashamed to use their hands. Anaesthesia and antisepsis revolutionized surgery, and in the last decade of the nineteenth century clinical pathology added another weapon to the armament against disease. The twentieth century saw the physician so surrounded by apparatus that in its midst the patient was in some danger of being overlooked. Then as a corrective came psychology, at first a kind of reversion to mediaeval methods of thought, but now more observational, and proving of the greatest value to medicine.

Thus the lecturer completed his survey of the long ages from the time when mediaeval craftsmanship found splendid exercise for its talents in pillared Gothic and storied windows, but when to apply experiment and handicraft upon a being having an immortal soul appeared to be like high treason, and when surgery was only to be tolerated as a painful necessity. The Renaissance brought a different attitude to the whole of life, but the new ideas generated seemed automatically to provoke resistance, of which the long-drawn-out refusal to accord surgery its proper place was one example. But now the long struggle had been won, and never again would the birthright of the "apposable thumb" be bartered for a mess of dialectical pottage.

INCOME TAX

EMERGENCY COMMISSIONS IN THE R.A.M.C.

In many cases the income-tax liability of an officer serving in the R.A.M.C. will be a dual one—there will be tax chargeable on his Army pay and deducted therefrom through his Army agent, and there will be liability in respect of the (presumably reduced) civil earnings of his practice or of his share in the practice in which he may be a partner. When an officer receives his commission his Army agents supply him with a form on which he gives such particulars as will enable the War Office assessor to get into touch with the inspector of taxes who has hitherto dealt with the officer's liability. Assuming for the moment that civil earnings have entirely ceased the liaison so established should enable the inspector to see that an appropriate adjustment is made in the local assessment, and to notify the War Office of any allowances—for example, balance of "life assurance" or "child" relief—that may be due from the assessment on the Army pay. The method of calculating that pay is complicated by the system of "allowances," but broadly the principle followed is the one applied to civilian employment—namely, that allowances paid in money are chargeable to tax, but not allowances provided in kind.

Adjustment of Civil Assessment

The adjustment, if any, which should be made in the local assessment on the civil earnings will of course vary with the circumstances of each case. In this connexion the possibility of claiming the special relief provided by Section 11 of the Finance Act (No. 2), 1939, should be borne in mind. That relief applies where the actual aggregate earned income of the financial year is less by 20 per cent.—or approximately 20 per cent.—than the aggregate earned income as assessed, and was explained in some detail in the *British Medical Journal* of October 21, 1939 (p. 821). In spite of this form of relief cases of hardship may occur, as, for instance, where an individual holding an appointment has been seconded for war service without vacating his appointment, with the result that he has in effect two sources of income—the civil source assessable on the previous year's basis and the Service employment assessable as a "new" source in the current year. In cases of demonstrable hardship the officer affected would be well advised to put the facts before the inspector of taxes and ask whether he cannot suggest some equitable basis of settlement. We cannot think that the Board of Inland Revenue could contemplate with equanimity that war service should involve fiscal injustice, and we feel sure that such cases will receive sympathetic treatment.

Serum Sickness.—A process of treatment with heat and alkali will remove from horse serum the factor causing serum sickness in rabbits without unduly impairing antibody content. —Serum Sickness in Rabbits: VII, Method for Removing or Destroying Factor causing Serum Sickness. M. S. Fleisher and L. R. Jones.—*J. Immunol.*, June 1939, **36**, 511.

TREATMENT OF NEUROSES IN THE EMERGENCY MEDICAL SERVICE

The following article, which describes the arrangements made to deal with neuroses in the Emergency Medical Service, has been received for publication.

The probable incidence of psychiatric or neurotic casualties resulting from air raids is a question upon which there is considerable divergence of opinion. It is sometimes anticipated that such casualties will occur in large numbers, but the evidence of those with practical experience of air raids suggests strongly that this view is mistaken. Professor Mira, for example, who was in Madrid and Barcelona during the Spanish War, states definitely that the incidence of neuroses was comparatively small—so small that there was not sufficient employment for the psychiatrists in Spain, some of these having to be transferred to general medical work. Professor Mira's observations will be found in his article "Psychiatric Experience in the Spanish War," published in the *British Medical Journal* for June 17, 1939.

The extent of the problem to be faced is therefore uncertain, and any scheme for dealing with psychiatric or neurotic casualties must be on a basis which will admit of indefinite expansion should circumstances require it, although it is far from certain that these circumstances will arise. Further, any such scheme must take account of the special character of the neuroses, which differ fundamentally from organic conditions in their origin and structure. It should be remembered here, however, that experience in the last war and in the Spanish Civil War showed that a number of patients who had been in the proximity of bursting bombs, and who exhibited symptoms of an apparently neurotic type, proved on examination to be suffering from injury of the nervous system, as demonstrated, for example, by haemorrhage or other changes in the cerebrospinal fluid. The diagnosis of such conditions from the neuroses is clearly a matter of the first importance.

When this diagnosis has been made, however, the handling of the neuroses proper requires essentially different methods from those suitable for wounds and organic injuries. The central fact which has to be borne in mind is that we are concerned here with conditions in which psychological factors play a predominant part. For this reason the development and duration of neuroses are greatly influenced by the manner in which cases are treated at their outset. If they are inefficiently handled at this stage not only may their course be prolonged unduly but the incidence of neuroses in the population may be greatly increased by suggestion and contagion: the potency of factors of these kinds was strikingly pointed out in the article by Professor Mira already mentioned. "When a man did not return to his post after a nervous breakdown his comrades were quick to notice it, and there was a tendency for more neuroses to appear. . . . It was our experience that you can always fill your psychiatric beds, no matter how many you decide to have; the supply creates the demand." Hence the policy of evacuating casualties as quickly as possible down the line, while suitable for organic injuries, has to be substantially modified so far as neurotic cases are concerned. Indiscriminate evacuation of such cases might easily lead to a grave increase in neurotic disorder.

The scheme elaborated by the Ministry of Health for dealing with neuroses which may occur under air raid conditions has been constructed on the basis of the foregoing considerations. The arrangements for the London area will be described in some detail. A similar organization has been built up in provincial areas.

Arrangements for the London Area

The special arrangements for dealing with neurotic casualties are of course closely linked with the main Emergency Hospital Scheme in the area. The structure of this scheme is now generally known, but the aspects relevant to the present subject may be briefly summarized as follows. London and the contiguous areas of the home counties are divided into ten Sectors, each radiating from a central area comprising one or more of the teaching hospitals. Each Sector contains a large number of hospitals, which are so organized that casualties arriving at first-aid posts or casualty hospitals within the Sector, and which cannot be dealt with other than temporarily at this level, will be evacuated to hospitals further afield in the same Sector.

This procedure, while admirably adapted to the rapid and appropriate disposal of organic injuries, requires considerable modification in its application to neurotic cases. First, in many of the cases success is dependent upon early treatment being obtainable near the site of onset. Secondly, if cases of simple fright and mild neuroses are immediately evacuated to hospitals further down the line the accommodation required for organic cases under the conditions of a severe air raid might be unduly strained. Thirdly, owing to the psychological factors underlying neurotic disorder this procedure might lead to a great increase in the incidence of such disorder. Fourthly, it is undesirable that neurotic cases should be treated in the same wards and under the same conditions as organic cases, as this again may tend to accentuate and prolong neurotic illness. Lastly, more severe neurotic cases require special methods and expert care, which may not be available in general hospitals.

It is therefore essential to secure that simple neurotic cases are dealt with adequately "in the front line"—that is, at first-aid posts and casualty hospitals, from which the large majority may be returned to their own homes after any necessary preliminary treatment; next, that only those cases which in the opinion of an expert require more prolonged treatment are sent down the line, facilities being provided for the careful sorting out of such cases; and, finally, that cases so sent down go to special hospitals, where the staff and methods suitable for these cases are available.

In order to secure these ends the following machinery has been established. Each Sector has been divided into four or five areas, and a neurologist or psychiatrist (including in the latter term "medical psychologist") has been attached to the hospitals of each area. The duties of this officer are: (*a*) to make himself acquainted with the topography of his district; (*b*) to get in touch with the various hospitals comprised in that district, and to ensure the smooth working of the neuroses scheme; (*c*) to establish, with the aid of the Group Officer, out-patient departments in one or more of these hospitals, where neurotic conditions can be treated, and to which general practitioners may send cases for which specialist aid is required; (*d*) to decide which cases need the more prolonged and specialized treatment to be obtained in the special neurological hospitals. In general, cases can be sent to these special hospitals only on the advice of the neurologist or psychiatrist. In the event of a local air raid any further specialist staff required will be drafted in from other districts.

In order to ensure adequate handling of neurotic conditions at the "front-line" level, instructions have also been issued to the medical personnel of first-aid posts (published in *British Medical Journal Supplement*, September 2, 1939). These instructions emphasize that in cases of simple fright, and in the majority of mild neuroses, all that is required is sympathetic but firm handling, opportunity for temporary rest, with or without sedative drugs, and then the return of the patients to their own homes. Such patients may be advised, if it is thought necessary, to report to their general practitioners or to attend the special out-patient departments established in their district. More severe cases will be referred by the officer in charge of the aid post to a casualty hospital, where they will be dealt with in the manner already described.

Four special neurological hospitals have been organized at various places around London, but all situated at least ten miles from the central area. These hospitals, staffed entirely by neurologists and psychiatrists, are designed for the treatment of those patients whose condition is too severe to enable them to be sent to their own homes or to be dealt with adequately as out-patients. The neurological hospitals also provide mobile units which can be sent to neighbouring areas to supplement, in the event of a local air raid, the neurologists and psychiatrists attached to those areas. Two of the special neurological hospitals (at Mill Hill and Sutton) have been organized by the Maudsley Hospital, which has in effect been divided into these two units. The remaining neurological hospitals are situated at Isleworth and at Maidstone, and a fifth hospital is projected in Essex. A special hospital has also been established near Watford to deal with cases requiring more prolonged psychological treatment.

In the event of further accommodation being required than the special hospitals are able to furnish, it is proposed to provide neurological units in association with the base hospitals more remote from London.

Provincial Areas

Arrangements similar to those of the London Area have been made in each of the provincial areas, though of course modified in accordance with the circumstances and needs of each area. In particular, the aim of providing special neurological hospitals in which the patients will be under expert care has been followed throughout. About twenty such units have been established in the provinces, each of which can receive patients from neighbouring towns or from a more extensive district.

A pool of neurologists and psychiatrists who are under contract for service has been prepared from which specialists can be dispatched immediately after an air raid if their services are required to supplement those locally in charge of arrangements.

TOXIC GASES IN INDUSTRY: PHOSGENE AND ARSINE

The Department of Scientific and Industrial Research has issued two further leaflets in the series describing standard methods for the detection of poisonous gases produced in industrial processes, dealing with phosgene (carbonyl chloride) and arsine (arsenic trihydride or arseniuretted hydrogen) respectively.

In the leaflet on phosgene (Methods for the Detection of Toxic Gases in Industry, Leaflet No. 8, published by H.M. Stationery Office, price 2s. 6d. net) it is pointed out that this gas is made specially for use in certain industrial processes, particularly in the dyestuffs, organic chemical, and pharmaceutical industries. It is also used in the manufacture of several metallic oxides, and may also occur as a decomposition product of trichloroethylene and of carbon tetrachloride (used, for example, in some forms of fire-extinguishers). The gas is much more deadly than chlorine. Atmospheres containing concentrations of phosgene only just detectable by smell or lacrimation, and consequently easily "tolerable," may prove fatal. There is a risk of serious lung injury from exposure to a concentration, by volume, of one part in 30,000 for as short a period as two minutes, and the maximum output permissible for prolonged exposure is one part in 1,000,000.

Arsine is dealt with in Leaflet No. 9 (price 2s. 6d. net). Some of the situations in which it may be encountered in dangerous concentrations are works employing electrolytic processes or in the manufacture of zinc chloride and sulphate and the smelting of arsenical ores of iron, lead, zinc, cobalt, etc. It is also encountered in dyestuffs, electroplating, galvanizing, hydrochloric acid and sulphuric acid works. Arsine smells faintly of garlic, and the smell may easily pass unobserved. No reliance, therefore, should be placed on the absence of such an odour as an indication that a suspected atmosphere is safe. There is evidence also that repeated exposures to very low concentrations result in a cumulative effect, with possibly severe poisoning as a result. There does not appear to be any limiting concentration at which this gas can be regarded as harmless for daily exposure, and continuous work should never be permitted in an atmosphere in which the presence of arsine can be detected by the tests described in the leaflet. Exposure to a concentration of one part, by volume, in 20,000 for one hour is dangerous, and a concentration of one part in 100,000 for twelve hours is fatal.

Reports of Societies

INDUCED PYREXIA

A meeting of the Medical Society of London took place on December 11 under the chairmanship of Mr. ZACHARY COPE, when the subject for discussion was "Induced Pyrexia."

Fever Treatment of G.P.I.

Dr. F. J. NATTRASS said that his principal experience of the method was in the treatment of general paralysis of the insane. In his view the electrical method of producing fever had great advantages over the infective method (for example, malaria). The fact that so many different methods had proved effective, though in varying degrees, suggested that the fever alone was the essential element in all these forms of therapy. It could no longer be contended that there was anything specific about malaria; it was only one of the agents for producing high and sustained fever.

The instrument he had employed for the production of short waves was a small radiant heat cabinet, the chief advantages of which were the low cost and the fact that a continuous record of rectal temperature could be maintained. He had also had some experience of inductothermy. Almost all methods could give good results if properly used. The chief factors to ensure success were a thorough knowledge of the system chosen and the closest observation and care of the patient during treatment. But, with such reservations, the published figures appeared to show that the results of fevers produced by physical agents were superior to those produced by malaria, and the mortality was considerably lower when physical agents were employed. He quoted some Ministry of Health figures from which it appeared that where special experience was assisted by organized arrangements the death rate directly attributable to benign tertian malaria was seldom more than 3 or 4 per cent., but where these precautions were not taken the case mortality had been as high as 10 or 14 per cent. During the past four years he and his colleague S. F. Evans had given 213 fevers to cases of general paralysis of the insane, with no deaths from the treatment. Treatment by electrical heat was less formidable for the patients than malaria and did not make them ill. They recovered quickly from the fever and if necessary could go out of hospital next day. After the first or second fever herpes labialis was common, but it was of no practical importance.

The general principle in treatment should be to persist until a maximum clinical response had been obtained. As a rule it was apparent at an early stage of treatment whether or not the patient was responding, but gradual improvement might continue for months after the cessation of the course of fever. About ten fevers were generally advised, but his experience had led him to believe that if the level and duration of the fever were adequate a shorter course was sufficient. His present practice was to give from four to six fevers of 106°, each for eight hours. Pyrexial treatment must be supplemented by full specific treatment, especially by tryparsamide and bismuth, but in general it had been found too dangerous to inject the drugs during the height of the fever. The fever soon caused a fall in the cell count and protein of the cerebrospinal fluid, but the change in the Wassermann reaction and in the Lange curve was very slow. Just enough sedative should be given to keep the patient reasonably comfortable without reducing consciousness to a point where drinking was difficult. It was important to maintain proper water intake during fever to compensate for loss by sweating. It should be made clear that not all cases of general paralysis of the insane were suitable for electropyrexia. The patient must be capable of a certain amount of co-operation, or at least be non-resistant. It might well be that malaria was still the method of choice for very excited or severely demented patients.

Gonorrhoea and Other Diseases

In gonococcal infections, Dr. Nattrass said, fever was usually reserved for resistant cases, and those with local extension of the disease in the male or female organs, also for the treatment of gonococcal arthritis. The treatment of such cases was in fact the most notable achievement of fever therapy. He was not competent to judge whether fever had been superseded by the new chemotherapy with sulphonamide compounds; he thought the matter was *sub judice*. Prolonged experience had shown that a temperature of just above 106° was near the upper limit of safety for application to the human subject. Lower temperatures than that might cure gonococcal infection, but only the higher temperatures cured the larger proportion of cases.

Apart from general paralysis and gonorrhoea, benefit by fever had been established or claimed in a number of diseases. Cases of gummatous meningitis resistant to chemotherapy had sometimes improved. In primary and secondary syphilis the results were better when fever was combined with chemotherapy, and much experimental work was proceeding on the subject. No case had yet been made out for the routine use of fever in early syphilis. In asthma the effect of treatment was difficult to assess. Prolonged remission or even permanent disappearance of asthma and especially of the status asthmaticus might follow fever incident to pneumonia. In the two largest series of reported cases of asthma, one of forty-four and the other of fifty, it was reported that 50 per cent. experienced remission of attacks for periods varying from a few days to a year or more. The authors were judicious in their claims, and made it clear that ultimate relapse was usual, although relief could often be obtained by a second series of fevers. In chorea, in some cases the movements were promptly checked by fever, and there was evidence that a short course reduced the total duration of the illness, while the presence of carditis was not a complete contraindication to fever therapy. At the same time he doubted personally whether fever was generally indicated in chorea.

Results with Inductothermy

Dr. **George Graham** described some work carried out at St. Bartholomew's Hospital, at first with Neymann's diathermy technique, but afterwards with the inductotherm and a heat-insulating bag. The bag formed a sort of waterproof quilt above and below the patient, whom it entirely enclosed, save for the neck opening, with the help of zip fasteners. Temperatures (rectal) were taken every quarter of an hour until they reached 104°, and then every five minutes until about 105° was reached, when the current was turned off. During the fever the patients were given as much fluid as they liked to drink, and sometimes they consumed 3,000 c.cm. a day. A fan playing on the face made conditions more comfortable. Morphine (1/4 gr.) was given about a quarter of an hour after the fever had started. As to the results, he mentioned five cases in which the symptoms and pathological findings were those of general paralysis of the insane; they had all done very well indeed under fever therapy. The Wassermann and sigma reactions had changed very little, but the cerebrospinal fluid cells and protein showed a considerable fall. The patients, with few exceptions, developed bad herpes widely distributed over the face, in some cases compelling a cessation of treatment.

In gonorrhoeal arthritis he had used the treatment in cases in which there were large swollen joints, and they had done very well. In one case after four fevers, although the joint condition cleared up, gonococci remained in the urethra, and a long treatment with diathermy was necessary before they finally disappeared. He believed that the treatment was useful in very severe asthma, and he quoted two cases. In one of them—a man who had required at least 80 minims of adrenaline a day—death took place eventually from lobar pneumonia, but there was no doubt that he had been made much more comfortable over a long period through being given fever. In the other case, that of a man who required 20 minims a day to keep him comfortable, the fever stopped the asthma altogether. In patients who had occasional attacks of asthma it was uncertain whether benefit followed fever therapy or not.

He had employed inductothermy in two cases of chorea, one a very severe one, and as a result of his experience he would use the treatment in all cases of chorea, save in those of young children under the age of 8 or 10 years. Cases of subacute infective arthritis or rheumatoid arthritis had been treated by induced pyrexia at the Mayo Clinic, and about 10 per cent. were reported completely arrested and 30 per cent. very much improved. Dr. Graham had himself treated some eleven cases of subacute infective arthritis. Those which were in the early stage of the disease had responded well, but if the disease had been present a long time, with already some fixation of the joints, no great amount of good was likely to be done. The patients felt much better on the day following treatment, having less pain and increased joint movement, but within three or four days the pain returned, though not to the same degree, and the limb became more stiff. Four or five fevers had been given to these patients, after which they were allowed to leave hospital, and some of them had gone on improving, but his opinion was that it would be well to give them more fever. He had also treated three patients suffering from spondylitis, and they had done very well as regards immediate relief of pain. He had studied the sedimentation rate in these cases; it went up considerably when treatment started, and afterwards settled down. Here again it was true that the earlier such cases were treated the better the result.

Beneficial Effect of Accompanying Fever

Mr. **Zachary Cope** said that this method of treatment seemed to be a criticism of common clinical practice. The first measure taken in a number of diseases, when the patient had fever, was to give him an antipyretic drug. Possibly the physicians had been wrong in trying to reduce fever as the first line of treatment. The temperature might come down, but the patient was not better, and was deceived into going about again before he ought to do so. In such cases the antipyretic drug was a delusion and a snare in cutting short the fever which was helping him to get well. He wondered whether the introducers of the discussion knew of any drugs which acted on the heat-producing centre, bringing about a fever of adequate amount but causing no serious harm.

Dr. C. B. **Heald** suggested that not hyperpyrexia but pyrexia, with temperatures of about 102°, and not given at weekly intervals but every day over a short period, might be effective in arthritis of a chronic type, with a suspicion, though no proof, of a gonorrhoeal nature. In some cases in which this method had been applied the same effect was obtained as with hyperpyrexia, but without any of the distress. Apparently if one got somewhere near the heat breaking-down point, and repeated it again and again, a clinical benefit was forthcoming which was not obtained in a series of hyperpyrexias separated by an interval of days.

Mr. **Johnston Abraham** had found the induction of malaria rather troublesome because one could not tell for ten days or so whether it was likely to serve its purpose, and once or twice, in his experience, it was not possible to stop malarial recurrences afterwards. He believed that the treatment of gonococcal infections by sulphonamide compounds had put the Kettering hypertherm out of action for the time being, but some 10 per cent. of gonococcal infections would not clear up at all under sulphonamide, and, moreover, there were always relapses even up to seventy days after apparent clinical cure by chemotherapy, so that a certain residuum of cases always remained in which hyperpyrexia was indicated.

Mr. **Williamson-Noble** mentioned that cases of secondary glaucoma sometimes yielded very good results on short-wave applications.

In his reply Dr. **Nattrass** said that he had had no experience of moderate pyrexia in arthritis, but one American worker had testified to symptomatic benefit following the use of hot baths. He did not think, however, that such measures could cure gonococcal arthritis; hyperpyrexia was needed for that. Dr. GRAHAM, replying to a question whether the treatment might be used in cases in which there was acute rheumatic fever, said that Neymann had stated that in the treatment of cases of chorea rheumatic endocarditis was not a contraindication. He himself had had only one case in which there was acute rheumatic fever. There was a definite systolic murmur at the apex. Since the hyperpyrexial treatment she had been very well indeed, and there had been no return either of chorea or of endocarditis; no murmur was now perceptible.

LIQUIDATING THE LOUSE

At a meeting of the Royal Society of Tropical Medicine and Hygiene on November 16, with the president, Sir RICKARD CHRISTOPHERS, F.R.S., in the chair, Professor PATRICK A. BUXTON read a paper on the louse. In his introductory remarks the lecturer said the paper and references to current literature were brief, since a full account of the insect was now in the press.[1]

The body louse and the head louse, he said, should be regarded as biological strains of a single species, *Pediculus humanus*. Lice transmitted such diseases as epidemic typhus, trench fever, and relapsing fever. In the civil population a considerable proportion of school children were infested with head lice. In the war of 1914–18 trench fever and skin complaints associated with *Pediculus* remained major causes of admission to hospital up to the end of the war.

Collective Biology

It was important to know what proportion of people were infested and whether they harboured few or many lice, also what was the constitution of the louse population itself—that is, the proportion of adults to young and males to females. Populations were dynamic, not static, and they were always increasing or decreasing, irregularly or according to the season or other factors. The louse belonged to an order of insects (the Anoplura) in which metamorphosis was slight, the larva being a small edition of its parents. Moreover, adult and larvae lived in the same place and fed only on the blood of human beings. Head and body lice and their eggs were found on or near the surface of the body and beneath the clothes, where the temperature and humidity were remarkably constant. Lice could be counted in garments or on the head, or they could be bred experimentally in gauze-bottomed containers held against the skin. Basic facts obtained under good experimental conditions by the latter technique showed that: (1) the adult female lived thirty-four days, laid no eggs on the first two days or the last, and on other days laid nine eggs—that is, a total of 279; (2) the eggs had a mortality of 30 per cent., this stage lasting nine days; (3) the larvae had a mortality of 40 per cent., this stage lasting nine days. Assuming that the adult progeny were male and female in approximately equal numbers and that every female was fertile, it was possible to construct tables and graphs showing daily births and deaths, total number living, etc. Under favourable experimental conditions viable females might exceed 1,000 on the sixty-first day. If conditions were less favourable, as they might be on a person able to achieve a partial control of the insect, lice could still multiply rapidly. On the assumption that the average female lived only twenty days, that she laid only six eggs a day, and that 80 per cent. of her offspring died without reproducing themselves, the descendants of a single female even then would amount to 1,000 viable females on the eighty-ninth day.

Actually, counts on the hair or on the shirt demonstrated that with both head and body lice small populations of from one to ten lice were commonest, and that counts beyond 100 were rare. This suggested that populations frequently started were exterminated, or that they were kept at a low level by human interference or by some other factor which was effective when the population was less than 100. Seasonal changes need consideration. In the Mediterranean head and body lice were rarer and less generally distributed in the hot dry summer than in the cold winter, and in such countries as Northern India and the north of Nigeria lice were rarer in the hot dry weather before the rains than at other times of the year.

Methods of Control

Though many methods had been recommended in the past for destroying lice no work had been done on this subject for twenty years, and many new insecticides known to be of value against other insects had never been tested on *Pediculus*. In discussing the subject of control it was best to consider head, body, and crab lice (*Phthirus*) together, as what killed one killed the others. On the other hand, the destruction of lice and eggs on the surface of human beings and their destruction on garments and blankets presented separate problems. If improved methods of controlling lice were required the most promising things to investigate were (1) the effect of the newer organic fumigants on lice in clothing and blankets; (2) the possibility of controlling body and head lice with powders or liquids containing rotenone and substances which occurred with it; (3) the possibility of "proofing" garments for at least some days with the halogenated cresols. As the military experience in the war of 1914–18 proved, one could thoroughly "delouse" a large body of men, but they became reinfested as soon as they went up the line again. The most important problem, on the military side, was to find a means of disinfesting a soldier without undressing him or taking him away from work, or as an alternative to "proof" him and his clothes so that they would not become infested.

The various ways of controlling lice included mechanical methods, the effects of temperature, and the effects of such contact insecticides as cresol and phenol, organic poisons like paraffin or kerosene and xylol, vegetable oils such as eucalyptus. With contact insecticides used on the head it was generally advisable to cover it with a bathing cap or towel for an hour and then wash the hair. Though *Derris* and other plants containing rotenone were extensively employed in veterinary practice against lice on domesticated animals they had not been tested on man. Fumigants included sulphur dioxide, hydrocyanic acid, carbon bisulphide, carbon tetrachloride, and naphthalene.

Dr. V. B. WIGGLESWORTH discussed the psychology of the louse. Lice were said to leave a patient with fever. Why was this? Was it due to a higher skin temperature, which repelled these insects, or was it due to a moist sweating skin associated with fever? The behaviour of the louse must be studied systematically and in detail to answer such a question.

Mr. KENNETH MELLANBY, Ph.D., had been studying certain published estimates of the degree of lice infestation in this country. In one northern city the medical report of the education department stated that only 1 per cent. of the children were infested, but records from a children's hospital in the same city disclosed a high percentage with head lice. The head of a child under 1 year was not suitable for lice, but children of from 2 to 4 years of age were almost as heavily infested as older children going to school. There was a higher incidence in girls owing to their longer hair. There also appeared to be minimal and maximal degrees of infestation at different periods of the year. Actually the figures were very disconcerting. In at least one industrial city in this country at one time of the year almost half the children were found to be lousy; this implied that during the course of the whole year very few children escaped. He had found that 70 per cent. alcohol, which was not particularly irritating to the skin, was effective against head lice in children. Three or four fluid ounces of the spirit were used. The hair was made wet and an alcohol compress was then applied under a rubber bathing cap for an hour or longer. Colonel W. BYAM asked Professor Buxton whether, when working with chemicals for the destruction of lice, he took into account the effects of these agents on their excreta. In trench fever, for example, the excreta were infinitely more important in the spread of the disease than the louse itself, and the excreta remained dangerous for long periods after the lice had disappeared from garments and blankets. Mr. G. H. STUART-BUNNING emphasized that the main reason for our being troubled with lice in this country was ignorance of the populace on this question. The best way to kill the louse was to educate local authorities, parents, and children.

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[1] Buxton, Patrick A. (1939). *The Louse*. London: Edward Arnold and Co.

Professor Buxton, in reply, agreed that the communication from Mr. Mellanby about his northern city was very disturbing. The official figure was 1 per cent., but the actual figure on admission to hospital was about 30 per cent. During the last three months the experience on evacuees gave ground for thinking that some such figure must be common in many parts of the community. There was urgent need on the civil as well as on the military side to devise better methods of control and to bring these methods into practical use. The faeces of lice were important channels of transmission of the rickettsiae of both trench fever and epidemic typhus. But it was highly improbable that most methods successful with the insect would disinfect faeces. Cresols might do both.

Correspondence

Regional Hospital Organization

Sir,—The article on regional hospital organization in your issue of December 9 (p. 1151) must be welcomed as calling attention to the necessity for clear thinking, which is now more than ever vital in the cause of an efficient hospital service. It is feared by some that better organization and some measure of control by the State would dry up the sources of private philanthropy, but there is reason to think that this would not be the case, for better organization would enhance the value of contributions to the hospitals in this country.

Your correspondent omits any reference to the method of finance which obtains in many of our orthopaedic hospitals. It has been evolved precisely because the difficulty of finding the funds for the maintenance of hospitals is so much greater than that of obtaining the necessary capital for building. At the hospital with which I am connected the capital sums required for building have been raised on a voluntary basis, but the maintenance is provided by the payments for the services rendered to patients. This does not mean that the patients themselves, in any but a minority of cases, provide the cost of treatment. It does mean, however, that this cost is met by various public authorities—education and child welfare committees, public assistance committees, private and insurance companies, and voluntary bodies. This enables the hospital to concern itself with its own running and improvements without having the anxiety of a steadily increasing debt. There are undoubtedly shortcomings and difficulties in this system, but without it many hundreds of orthopaedic cases would have been left untreated. It presents a typically English compromise and allows co-operation between different authorities and people interested, in a way which would otherwise be difficult, if not impossible. (It may be said that orthopaedic cases can be more readily dealt with under this system than can the more acute and emergency cases, but this is a question of degree, not of principle.)

I am writing this letter because I feel that in future planning every proved method of dealing with hospital problems should have careful consideration.—I am, etc.,

Nottingham, Dec. 11. S. Alan S. Malkin.

Treatment of Wounds by Closed Method

Sir,—I would state at once that my experience in the treatment of open fractures by the closed method has been confined to civilian types of injury and almost exclusively to patients treated within a few hours of their accident. The results in a large number of patients have been such that I was in no way surprised to learn from Dr. Trueta that the method is also eminently successful for war injuries.

Mr. E. T. C. Milligan (*Journal*, December 9, p. 1160) lays stress upon a mechanical principle that must be realized if we are to appreciate the detailed principles underlying this method of treatment and if we are to persuade those who still hesitate to use the closed plaster in the treatment of open fractures. The treatment rests upon the main principle of re-establishing and conserving the vital quality of the damaged tissues. After the surgical débridement we are assured by active bleeding that the outflow of circulating fluid is adequate, but to maintain life an effective circulation is essential. The return flow through venous and lymphatic channels is equally important, for if this is impaired stasis, oedema, and even death may result. There is no clinical test to prove at operation that the return flow in the damaged area is adequate, but we know the factors upon which this return flow depends. One of importance is the normal tension in limiting membranes such as skin, aponeurosis, fibrous sheaths, and fascia. The open wound has released this physiological tension. In so far as it is safe to do so, that tension should be replaced; the safest method is the application of a closed plaster. The application of this plaster is as important a technical step as any in the surgical procedure, for it must hold the reduction of the fracture and supply this necessary even pressure; too tight a plaster is dangerous, too loose a one ineffective. The plaster itself should be of the quick-setting type. One that sets in a few minutes not only allows speed of work but lessens the possibility of movements during the setting stage with the occurrence of rucks and unevenness in the cast. For those fractures below the knee associated with gross muscle and bone damage it is difficult, if the first plaster has to be changed before any sort of union is present, to hold the original reduction. If too much traction is applied the fragments are distracted; if not enough is applied they angulate; a quick-setting plaster helps in this difficulty.

One final point regarding this treatment. The smell of open wounds under plaster is unpleasant to us while the patient is in hospital, but if treatment is continued in the small homes of the working class the smell becomes intolerable to both the patient and his family. A few drops of chlorinated eucalyptus dropped on the plaster several times a day helps to keep such families together.—I am, etc.,

Richmond, Surrey, Dec. 10. William Gissane.

Treatment of Air Raid Casualties

Sir,—The principles of the treatment of air raid casualties as expounded by Dr. Trueta are at the moment receiving—quite rightly—wide publicity in the medical world, and it seems an opportune one to ask ourselves if all the principles laid down by Dr. Trueta are in fact sound. In this letter I wish to deal with one principle alone—namely, the speedy removal to hospital at all costs of the injured in an air raid.

If the injured man can be on the operating table within fifteen or twenty minutes so much the better, says Dr. Trueta, but always presupposing, in my view, that he has been adequately dealt with *en route* to the hospital, that he has been carefully lifted on to the stretcher, which, in its turn, has been carefully lifted into the ambulance, which is modern, fully equipped and manned, and driven by a trained ambulance driver, then I agree with Dr. Trueta that speed is not only safe but essential. Alas! how many cases are going to be so lucky, for I think that the importance of adequate stretcher-bearing, expert ambulance driving, and careful and gentle handling of the injured has not been sufficiently brought home to the public by the profession.

What in actual fact will be the fate of most of the badly injured—and, if my picture is not very heartening, it is as near the true picture as can be—is that the injured man will be picked up by untrained people, heaved and pushed on to a stretcher, jacked up into an ambulance (which more often than not will be a converted grocer's van, inadequately sprung, lighted, and equipped), and driven by someone who has little or no conception of how to drive a car with injured aboard. Then, if he is still alive and conscious, the moment at which this ambulance starts its 40 m.p.h. dash to hospital will be the one at which the injured man will pray that he was neither. In the River Emergency Service we shall embark most of our injured on to our ambulance ships from other ships and disembark them at points convenient for evacuation either to the C.C.S. or to the sector hospitals, and during the time they are in the ship I propose to do everything possible by means of splints, dressings, etc., to alleviate their sufferings.

I maintain that, haemorrhage apart, the principle of speed in surgery is fundamentally wrong even under the most favourable conditions, and dealing with the injured in the streets or elsewhere is but a branch of surgery. I should like to have the views of some of our senior surgeons with practical experience of war conditions on this matter.

Finally, if some of Dr. Trueta's other views are correct, all first-aid posts which are not attached to hospitals should be abolished. This is a view contrary to that adopted by the authorities in London, and it is of the utmost importance from the medical, as well as from the financial, angle that this matter should receive all the publicity possible.

If criticism from a general practitioner who has not had recent experience of treating injuries comparable to those received in air raids seems presumptuous, nevertheless it is justified if it calls forth an answer from those who are best qualified to give an opinion on the important points which he has raised.—I am, etc.,

London, S.W.3, Dec. 13. R. PROSPER LISTON.

Treatment of Gas Gangrene

SIR,—During 1915–16 I had the good fortune to be acting as surgical dresser to the late Sir Herbert Waterhouse in Russia, where gas gangrene was a frequent complication of gunshot wounds. Many of the wounded had spent several days *en route* to the C.C.S. or the base hospital, and fully developed gas gangrene of the limbs required immediate amputation by the guillotine method. In some cases the infection had invaded the abdominal wall, the thorax, or the neck, making amputation impossible. Sir Herbert Waterhouse treated such cases with generous incisions, followed by the rubbing of powdered crystals of potassium permanganate into the wounds. This led to violent reaction with the emission of heat and steam, and the treated surfaces became covered with a charred coagulum. This separated after a few days, leaving a granulating surface which ultimately healed.

During the recent correspondence upon the treatment of gas gangrene this method of treatment has not been mentioned, so that I venture to bring it forward as a method that can be adopted in apparently inoperable cases.—I am, etc.,

Sherborne, Dec. 8. J. WHITTINGDALE.

Bipp

SIR,—This Rutherford Morison method of the treatment of war wounds was so successful in the last war that I trust it will not be forgotten in the present. To Dr. Austin Priestman's letter (December 9, p. 1164) I would add the important closure of the wound afterwards by large stitches, which wound need not be dressed for ten days. The slight exudate of bipp would look like pus, but the temperature shows this is not so.

The cleansing of the wound by 1 in 20 carbolic, the washing with methylated spirit, the application of the bipp, and the closure of the wound with stitches seem to be similar to Dr. Trueta's closed plaster method described in the *Journal* of December 2 (p. 1073), except that there need be no removal of damaged tissues, only cleansing and fixing in position.

I did a hundred consecutive cases after the Somme offensive of 1917 in the Wharncliffe War Hospital and obtained ideal results, as all were healed in from ten to fourteen days with no pain and no painful dressings, which is very important, as the shock is too severe to be disregarded.

As one who suffered from painful face wounds requiring many dressings, and from my experience later as a surgical specialist, I urge that this method be not forgotten.—I am, etc.,

Chesterfield, Dec. 11. K. B. MACGLASHAN

Endotracheal Anaesthesia

SIR,—Having read the summary upon the advantages and disadvantages of endotracheal anaesthesia by Drs. Rosalind M. P. Milne and J. Ross Mackenzie in your issue of December 9 (p. 1136), I am left with the impression that in spite of the overwhelming preponderance of advantages over disadvantages given by them they are rather averse to endotracheal anaesthesia except in special circumstances, and are definitely hostile to nasal, particularly blind, intubation under any circumstance.

To my mind and in my experience the most important factor in the achievement of good anaesthesia is the establishment and maintenance of a perfectly free airway. This factor can only be obtained with certainty in every case by the introduction of an intratracheal tube. Surely the routine application of a method which establishes a perfect airway in every case needs no defence upon scientific grounds.

The routine application of laryngeal intubation in anaesthesia is, of course, only justified if the intubation can be performed without trauma and without dangerous or unpleasant sequelae. That this can be done is shown by the report of Drs. Milne and Ross Mackenzie upon their 1,253 cases, none of which exhibited any unfavourable sequelae. The complete lack of unfavourable sequelae in this series is remarkable in view of the methods employed, and can only indicate a high degree of skill and care in the performance of the intubations. I am convinced that the surest way to avoid trauma is to reduce instrumentation to a minimum, or, better, to eliminate it altogether by adopting the "blind" technique of nasal intubation introduced by Magill. Once the knack is acquired, provided that the nasal passages and, if one prefers it, the larynx have been desensitized and devascularized by means of spraying with either cocaine 10 to 20 per cent. or percaine 2 per cent. with adrenaline and the nasal tube efficiently lubricated, "blind" intubation can be performed in almost every case with an absolute minimum of trauma. I do not agree that complications are more frequent after nasal intubation; they are entirely dependent upon faulty technique, and their incidence is exactly proportional to the degree of skill exhibited by the anaesthetist, whether the route be oral or nasal.

The choice of tube is a very important factor in the technique of endotracheal anaesthesia, and calls for a nice degree of judgment which is only acquired by practice. The tube should be sufficiently small to pass through the nose without the use of force, and should be sufficiently big to fit the larynx snugly. The snugly fitting tube passed through the nose is held steadily in place and does not move, thus eliminating the trauma to the delicate membranes with which it is in contact and which is occasioned by the movement and rubbing of a smaller tube; moreover, it discourages the constant regurgitant stream of irritating vapour which occurs around a smaller tube, also the inspiration of mucus between the tube and the wall of the larynx. With a well-fitting tube the only times at which trauma may occur are during introduction and removal; it is important, therefore, that a sufficient depth of anaesthesia to abolish the laryngeal reflex be instituted before either of these acts is performed.

If oral intubation by direct vision is to be performed the Magill tube, which was designed primarily for nasal intubation, is not the tube of choice, since its curve renders introduction more difficult than that of a straight tube.

Drs. Milne and Mackenzie rightly stress the great advantage conferred by the intratracheal tube in eliminating the dead space of mouth and pharynx. This is of particular importance in the maintenance of nitrous oxide and oxygen anaesthesia, where an accurate control of the gaseous mixture is so essential. It should, however, be stressed that the dead space is not eliminated by the loosely fitting tube advocated by Drs. Milne and Ross Mackenzie unless the pharynx is tightly packed with lubricated gauze around the tube—a procedure which is not devoid of the risk of trauma and which is rendered unnecessary by the adoption of a larger tube.

I have assumed that in their summary Drs. Milne and Ross Mackenzie have referred in the main to anaesthesia by inhalation rather than by insufflation. The latter method, which except in special circumstanes is now little practised by anaesthetists, requires an intratracheal tube of lesser circumference than the rima glottidis, or a second tube, to facilitate the escape of gases delivered to the lungs under pressure.

In conclusion may I say that, while recognizing certain definite contraindications to the passage of an intratracheal tube, I cannot remember one instance in the routine use of intratracheal anaesthesia when the advantages of perfect control of the anaesthesia, the feeling of safety against all emergencies, the smoothness of the anaesthesia, and the minimum amount of what we must never cease to regard as noxious agents required to produce the optimum level of anaesthesia were not of equal benefit to the patient, the surgeon, and myself; whereas I can remember any number of instances when I have had cause to regret that I had not passed an intratracheal tube.

I am in complete agreement with Professor Macintosh when he advises all who would practise anaesthesia to familiarize themselves with the technique of intubation before interesting themselves with the newer anaesthetic agents. I am convinced that the problem of providing mass anaesthesia in war hospitals at home or abroad, should the need arise, will find its solution largely in the routine use of intratracheal tubes rather than in the use of this or that agent.—I am, etc.,

Bournemouth, Dec. 9. S. F. DURRANS.

SIR,—In their interesting paper on endotracheal anaesthesia published in the *Journal* of December 9 (p. 1136) Drs. Rosalind M. P. Milne and J. Ross Mackenzie are, I think, inclined to lay too much stress on the difficulties attending a method which, from all points of view, is so very often essential to the safety of the patient. Writing as a laryngologist who has of necessity had to intubate his own patients before operation and with an experience going back twenty years, when the now obsolete Kuhn's flexible metal tube was employed, I am confident that blind intubation if properly performed is a quicker and therefore a better method than that carried out by direct vision by means of an endoscope. Blind intubation presupposes a certain easily acquired tactile education.

It is advisable to apply (under guidance of the left index finger) some 10 per cent. cocaine solution by means of a small piece of gauze held in a McKenzie-type laryngeal forceps as soon as the patient is "under" and a few minutes before inserting the rubber tube. This latter can with advantage be suitably curved and braced by inserting through its whole length a piece of flexible copper wire covered (especially at its ends) by bicycle valve tubing bound to the wire in places by thread. To facilitate its rapid withdrawal and introduction the end of the rubber-covered wire as well as the end of the tracheal tube are dipped in liquid paraffin just before use. I have modified Magill's introduction forceps so that the distal end takes a downward dip for about one and a half inches above its actual grasping terminal, which latter is, of course, in the plane of the vocal cords and when closed embraces the tracheal tube with its enclosed wire. The proximal part of the forceps—that is, that part which is outside the patient's mouth—is deflected laterally and downwards, so that the hand of the introducer is removed from his own line of vision. After localizing the arytenoid eminences and the epiglottis with the left index finger, the lower end of the stiffened tube grasped by the forceps is brought between the epiglottis and the finger and, during an inspiration, can be very easily introduced into the trachea. Slight cervical flexion with extension at the atlanto-occipital joint will facilitate introduction. Though employing this method for many years I have only once known a vocal granuloma to occur, and in that case a Kuhn's metal tube had been used.

In nasal introduction with an unstiffened tube I find that the tube very often finds its way straight through the cocainized larynx if advanced during inspiration. If this fails it can readily be passed by the use of the left index finger and forceps as above described. Not only gas and oxygen but, by the use of a connecting tube and funnel, chloroform mixture or (by using a larger-size funnel) pure ether can be readily administered in this way.

By employing the method of introduction described one only requires "simple apparatus and portable agents," and considering the facility with which it can be carried out as well as its comparative safety and frequent desirability, if not necessity, I think the "claims of the undergraduate" will be better served when, as I feel sure will be the case in the near future, a practical knowledge of anaesthetic administration will include a practical knowledge of endotracheal anaesthesia.

I feel sure that Drs. Milne and Mackenzie did not mean to be taken literally when they advised the use of a gauze pack "saturated" with liquid paraffin for the purpose of occluding the supralaryngeal region. I have found gauze squeezed out of normal saline to be effective for this purpose—but a word of caution. It is easy for such a plug to be overlooked at the end of operation, and in one of my patients such an oversight necessitated a "crash" tracheotomy after the patient was back in bed. Incidentally, it is always advisable when giving endotracheal anaesthesia to have at hand a catheter with its distal end cut straight across so that adventitious secretion blocking the tube can be quickly aspirated.—I am, etc.,

Cork, Dec. 15. J. BOWRING HORGAN.

Psychological Casualties in War

SIR,—Dr. T. A. Ross urges the sifting out from recruitment of psychopaths. It is amazing that such a need should still exist. Dr. W. Mayer-Gross (and others who, like myself, are listed to deal with mental casualties) wants an efficient method of ensuring early contact between therapist and patient. Dr. A. C. D. Telfer wants psychological treatment centres; and so on.

I have been in communication with the Central and Local Emergency Committees, the Ministry of Health, the War Office, and the Group Officer of the Hospital Emergency Service. The general response is, "Be a good chap and wait until something happens; try So-and-so—they may know something." So I am still in the dark as to where, how, and with whom I am expected to work when casualties arrive.

There are psychological advisers to the Services and Ministry who presumably know what is being aimed at in Service and civilian spheres. Would it not help those of us who stand and wait if we were informed by those advisers (by letter or at a meeting) as to their plans, metropolitan and provincial? It is fifteen months since I was asked by telegram to be available for public service as a psychiatrist and I am still waiting for instructions.—I am, etc.,

Norwich, Dec. 11. R. LOUIS ROSE.

SIR,—You were good enough to publish recently (October 14, p. 764) an article in which I reported the type of psychiatric material seen at a London hospital in the first weeks of war. It may be of interest to consider the subsequent history of this clinic in view of the many letters appearing in your *Journal* with regard to the expectation of neurosis and psychosis in the civil population should air hostilities be intensified.

The first period—that on which I reported—in the early part of September put the hospital in the position of serving an unusual number and type of patients, as the railway terminus near by was crowded with a specially selected group of population—fugitives from the threat of bombardment. Subsequently the hospital has served its peace-time population somewhat depleted by evacuation—an evacuation which may have selected and removed many potential neurotics, thus possibly falsifying any attempt to compare war and peace figures for this clinic. For this and other reasons assumptions based on the figures of such a clinic can be no more than suggestive. They may, however, be of interest. In the first few days the hospital was attempting to carry on its usual out-patient and casualty services while reorganizing at the same time on a new basis, and I find I cannot trace all the notes for that period. However, the loss of notes is non-selective and need not falsify proportions.

	September	October	November
Cases precipitated by stresses attributable to the war situation ..	11 (55%)	3 (25%)	3 (14%)
Cases precipitated without relation to war stress	9	9	18
Total	20	12	21

The falling off of war stress as a precipitating factor as the war passed from an "acute" to a "chronic" phase seems to be suggested by these small and, no doubt, inadequate figures. The cases included are all cases not previously seen at this clinic, and are "new" in the sense that the breakdown, though in some cases merely a relapse, was of recent origin. Psychotic and neurotic cases are included.

I should find it hard to believe that any large increase in the number of accidents in industry would not lead to a proportional increase in post-traumatic neuroses. The stress of accident falling on more people would consequently fall on more potential neurotics, who might thereby be caused to break down. Should a larger stress than normal fall upon the population as a whole one would surely expect a larger number of neurotic and psychotic breakdowns to occur. The threshold has, as it were, been lowered. That the figures for the last war can tell us anything of value about the possible effects of this war upon civil populations is doubtful. They tell us little enough that is reliable about these effects upon the Forces. Probably we are looking not at a single process but at two, which taken together tend to obscure or cancel out each other. There is in the clinic of which I write a very distinct falling off of old cases. Whether these have recovered owing to war employment or have merely departed to the country or stayed at home I cannot at the moment say. But their disappearance has kept the clinic numbers down to approximately their pre-war level. Such a process on a larger scale might obscure an increase in the number which would otherwise be apparent.

The only conclusion which seems obvious from the discussion of psychiatric conditions of the last war is that the data are so conflicting and unreliable that they are of little value save to suggest that they should be more carefully collected in this war.—I am, etc.,

St. Mary's Hospital, London,
W.2, Dec. 4.
GEORGE PEGGE.

SIR,—This correspondence has come to embody the principal sins of which controversialists can be guilty, including the old unconscious device of attributing views to me which I have not advanced.

If Dr. A. T. M. Wilson (December 9, p. 1161) had read the entire correspondence with his usual care he would not have had real doubt that I was concerned with civilian psychiatric casualties, and that I had made the suggestion (and not entertained the "belief" which Dr. G. R. Hargreaves (p. 1161) seeks to father upon me) that these might not after all be particularly numerous on the grounds that (*a*) there was no evidence of such an occurrence among civilians during the last war (the assertions of regius professors, if not supported by fact, are not evidence, *pace* Dr. A. C. D. Telfer, December 2, p. 1111); (*b*) that even in the Spanish War, according to Dr. Mira, psychoneurotic and similar forms of breakdown did not increase; and (*c*) that there may be reasons even (cf. Dr. Weatherly's observations, p. 1019) for thinking that they might diminish.

I am grateful to Dr. Wilson and to Dr. Hargreaves for drawing attention to the number of people receiving pensions for neurotic disabilities after the last war, because the deductions that may be made, while not necessarily those which Dr. Hargreaves would evidently draw, are of considerable importance for those faced with casualties among civilians. Dr. Hargreaves's talk of the "appalling" number of such psychoneurotic casualties shown in the pension statistics suggests an attitude of just the kind I had in mind when I spoke of creating hypochondriasis in the population. Was it so appalling? It amounted to only 2 per cent. of the troops that survived the war. According to the views advocated by a number of people in peace time this is less than the ordinary incidence of psychoneuroses and allied conditions among the general population. Was it unavoidable that there was even this number? Is it not conceivable that the hastily devised measures for treatment and the methods of assessment of pensionable disability may not have added to rather than limited the number of such chronic casualties? As Professor Mapother once said, there were not a few who "bought a dream book," and with its aid perpetuated illnesses which otherwise might have ceased from neglect or from a different line of treatment. The possible effect of the mere existence of a pension scheme has to be very carefully considered in the case of civilian casualties, especially in a community where in peace time—as Dr. T. A. Ross has emphasized in a similar context—it had become possible to obtain legal redress for even witnessing an accident.

Obviously it is unwise to minimize the importance of foreseeing this problem in all its aspects, but nothing is gained by exaggerating the position by misreading the meaning of previous experience and, on the basis of this, setting up "psychological centres" staffed by enthusiastic but inexperienced people. Let the existing clinics reorganize themselves as efficiently as possible under war conditions; let them be closely attached to the hospitals where casualties in general are to be treated; and let medical staffs in general be taught that neuroses arising in such conditions, if properly handled, are likely to be short-lived and that the treatment should be simple. Let us also remember that in the conditions which may occur during air raids it may be that doctors are not more qualified than many others to deal with the states of minds that will arise, since the example of courage will usually be the main thing, in the early stages at least. Hurry the frightened person to a doctor at the very start, and he will be apt to conclude that he is unnaturally ill rather than quite naturally frightened.—I am, etc.,

Matlock, Dec. 12.
R. D. GILLESPIE.

⁂ This correspondence is now closed.—ED., *B.M.J.*

Anaesthesia in War Time

SIR,—I hope you will be able to afford me space on this subject. My experience is vast in anaesthesia and in surgery, having for twenty-five years been the general (using the term "general" to cover all the surgical specialties) surgeon in charge of a hospital of 500 beds, and myself the only surgeon for all major surgery, operating usually from 9 a.m. till 5 p.m. seven days of the week, and personally supervising every anaesthesia. My anaesthetist was a dispenser trained by me from 18 years of age. He used from 100 to 150 lb. of chloroform in the year with a Junker inhaler. There was no more competent man living at his job. In that time we had three deaths—one an adenomatous goitre and two persistent thymus gland cases, which latter I learned are very characteristic. My anaesthetist watched the breathing, having the stomach region exposed for that purpose, and the corneal reflex. The slightest irregularity in breathing he would call my attention to. If these two facts are looked after—to keep the corneal reflex just under control and to see that the breathing is regular—I feel that for war or most other general surgery chloroform is one of the very safest anaesthetics, granted that it is pure and free from ethyl chloride.

For those in search of anaesthetic adjuvants—basal anaesthetics, new drugs—I commend the old ones which we know and which we know how to handle—morphine and alcohol—and they will find them far less dangerous than any other and just as efficient; there will be fewer coroners' inquests than after barbiturates.—I am, etc.,

Clogher, Co. Tyrone, Dec. 5.
HENRY SMITH.

SIR,—The section on chloroform in our article on "Anaesthesia in War Time" (*Journal*, December 2) was in no way meant to suggest that avertin and chloroform should be combined, but that on theoretical grounds the danger of ventricular fibrillation could be avoided by the use of basal anaesthetics generally. *We consider that when possible chloroform, alone or in any combination, should be avoided.* We have used it, however, following avertin in bronchoscopy and have seen this sequence used in amputation of the breast where diathermy was employed. In our article we stressed the dangers of delayed chloroform poisoning. Nevertheless, we do not consider there is a greater danger of acute yellow atrophy of the liver from the combination of avertin and the small supplementary dose of chloroform which then suffices to depress the patient to the required depth of anaesthesia than there is if chloroform alone is used, since here a very much larger dose of this drug is necessary to achieve a similar depth of anaesthesia.—We are, etc.,

Department of Anaesthetics, R. R. Macintosh.
Radcliffe Infirmary, Oxford, Dec. 16. Freda B. Pratt.

Sir,—Dr. J. B. H. Holroyd's letter in your issue of December 9 shows a complete misapprehension of the value of the conjunctival and corneal reflexes in measuring the depth of anaesthesia. The light touch, the *tactus eruditus*, employed by an anaesthetist cannot, and in point of fact does not, cause any damage whatever, while it gives valuable information about the need for more, or less, anaesthetic. There is no call whatsoever for the barbaric method of "sticking fingers into patients' eyes"—no more than we would employ a sledge-hammer to elicit knee reflex. There is no known case of eyes having been injured by "corneal attacks by anaesthetists." When a patient is "under" and has become unconscious he is blind, and there is therefore no corneal reflex obtainable: this can be found by lifting the upper eyelid and observing the presence or absence of reaction to light without in any way touching or damaging the eye. Surely every anaesthetist knows this.—I am, etc.,

Edinburgh, Dec. 10. G. D. G.

*** This correspondence is now closed.—Ed., *B.M.J.*

X-ray Examination of Militiamen

Sir,—If I am not yet too late to make a contribution to this discussion I should like to bring forward one aspect of it which has not yet been considered.

All over the country are men anxious to serve, among whom are a certain number of sufferers from pulmonary tuberculosis. With misguided patriotism these men are apt not to disclose their true history to the medical examiners, with the result that, lacking universal screening, many are missed clinically and passed into the Services, where most will at least become pensioners and at worst not only accelerate their own deaths but probably cause those of others as well.

In my own area, with just over a thousand on the register, I have learnt in various ways of six who have been accepted for service, and I have no doubt that there are others who have not yet come to my knowledge. Two were called up as reservists. The first is an early and sputum-negative case, whose most recent film taken in January of this year shows soft infiltration in the left apical and subapical regions, with a fresh patch in the fourth intercostal space when compared with his previous film taken in May, 1938. The second is a slight quiescent case from a household where there has been one death from the disease and another positive-sputum case still alive. His most recent film, taken on May 10, 1937, shows hard mottling at the left apex and in the right lower lobe, with thickened pleura at the right base. This man is now in France. One joined a Territorial anti-aircraft battery shortly before the outbreak of war. His latest x-ray photograph, taken in February of this year, shows multiple calcified foci in the right upper zone with a third-stage cavity one inch in diameter just below the right clavicle. His sputum was positive until 1937, but was negative when last examined in February last. Three were volunteers. The first had tuberculous peritonitis starting in 1934, and in early 1938 developed a lung lesion in the left mid-zone. A period of sanatorium treatment caused this to resolve, and his lungs were clear on his latest film, taken in August this year. There is still some doubt, however, about the abdominal condition being completely arrested. The second had an extensive dry pleurisy on the left in August, 1938, and films taken then and later show fibrosis and calcification involving most of the right upper zone, and, while this is apparently stationary, the added strain of service conditions may easily bring about a breakdown. The third was a recent discharge from sanatorium, in good general condition but with upper-zone infiltration of both lungs, bilateral cavitation, and a positive sputum. He passed the medical examination and was only prevented from joining the R.A.F. by his father approaching the medical officer of health the day before he was due to leave for his unit.

Although the authorities are apparently not prepared to face the expense of x-ray examination for all, surely arrangements could have been made for them to have complete lists of all men known by the tuberculosis authorities to be suffering from pulmonary disease of such a nature and extent that service with the forces was contraindicated. This would have ensured that at least the group of which I have written would not have slipped through their medical net, to become in many cases a further burden on our national expenditure.—I am, etc.,

A. Scott,
Wolverhampton, Dec 8. Clinical Tuberculosis Officer.

Eye Injuries from Gas

Sir,—In his interesting article on ophthalmic injuries from mustard gas (*Journal*, December 16, p. 1181) Mr. John Foster gives me credit for an experimental work which showed that the effect of gas on the cornea is instantaneous. This important work was done by Brevet Colonel L. T. Poole, who kindly permitted me to use his findings for my paper at the Aberdeen Meeting, and it is to him and not to me that the credit must be given.—I am, etc.,

London, W.1, Dec. 16. Arnold Sorsby.

Carcinoma of the Stomach

Sir,—The many good results which surgeons nowadays obtain from operating on early cases of carcinoma of the stomach make its immediate diagnosis of great importance. The difficulties have been stated by Sir James Walton carefully from his long experience (*Journal*, December 9, p. 1127), and, if I may say so, from the aspect of a physician very fairly.

It will be agreed that carcinoma of the stomach can be broadly divided into two groups: Class A, with a short history of dyspepsia not exceeding a few months and with achlorhydria; and Class B, with long history of dyspepsia, usually extending over ten or more years, and with normal gastric acidity. With regard to Class A, there is little dispute that the condition is carcinoma from the onset of the symptoms. Why, then, is it mistaken for gastric ulcer? I find that in many cases these patients give, initially, a history which may be said to be characteristic of gastric ulcer. As Walton says, one should be more than suspicious of gastric ulcer commencing after the age of 40. On careful questioning and going round and round the history, one finds that it gradually ceases to be so similar to that of gastric ulcer, with the symptoms of which the patient is often familiar. To treat these cases as gastric ulcer is an error in diagnosis, not a question of treating gastric ulcer medically too long. But the diagnosis is not always so simple as it might seem later in the course.

I am in agreement with Walton as to the rarity of gastric ulcer commencing after the age of 40, but I cannot go so far as to say that dyspepsia after 40, with a clear past history, is due to carcinoma of the stomach unless the contrary can be definitely proved. The cases of carcinoma which fall into Class B are more difficult to interpret. In this group there is a long history of dyspepsia over many years with a short final period of a different type of symptom, due to the development of carcinoma. How can the long period of the initial symptoms be interpreted? We may accept it that some lesion of the stomach becomes carcinomatous, but is it justifiable to assume that the lesion is a gastric ulcer? Walton refers to these cases as having a history *suggestive* of a past ulcer; quite rightly he does not say *characteristic* of an ulcer. I do not deny that an undoubted gastric ulcer may develop into carcinoma, but in my experience, and I gather also in Walton's, these cases are very rare. Of his 112 patients who gave a previous history suggestive of gastric ulcer, only ten fulfilled his requirements of carcinoma developing from a gastric ulcer. I have long been puzzled by the indefiniteness of the symptoms in these cases and by the rarity with which characteristic features of gastric ulcer develop in spite of the long period of their histories. In some cases the diagnosis of previous gastric ulcer is only made when the carcinoma is finally found.

Walton gives four requirements for accepting that the carcinoma has started in a gastric ulcer—namely, the history suggestive of past ulcer; the presence of free hydrochloric acid; a lesion at operation simulating a chronic ulcer; and a microscopical report indicating that this was the nature and origin of the growth. How should one interpret the aetiology of the cases which fulfil only the first two requirements? I would suggest that there is a lesion of the stomach other than ulcer which after many years' duration may terminate in carcinoma with a normal acidity. So far few of these cases have been watched with the modern knowledge of chronic gastritis, incomplete as it is, and with the advantages of gastroscopy, in the earlier stages of their history.

Is this lesion a form of chronic gastritis? We are here considering gastritis which produces symptoms and is associated with a normal acidity, and not the atrophic gastritis which may lead to carcinoma of the type referred to above as Class A. If the lesion is chronic gastritis we should not have at our disposal medically a method of treatment substantially different from those at present in use, and surgery would have none. It definitely affects the argument, partly based on these cases, that physicians are to blame for treating gastric ulcer too long, and that if only adequate surgical treatment had been performed earlier the carcinoma would have been prevented. These patients, when they die from any cause in this stage, would at necropsy be found to have neither ulcer nor carcinoma, and hence would not be included in investigations on the relation of gastric ulcer to carcinoma. The aetiology of this group is an important question to settle, and it may need several years of observation. In the meantime I would suggest that in only a minority of these cases, with a long history of dyspepsia and a normal gastric acidity, is carcinoma secondary to gastric ulcer, and that some other lesion is at fault. It may still remain true in these cases that the development of carcinoma should have been recognized when it was operable, but the error is one of diagnosis at that point and is not connected with the previous treatment.—I am, etc.,

London, W.1, Dec. 12. H. LETHEBY TIDY.

SIR,—The survey of this subject which Sir James Walton has written in the *Journal* of December 9 is most comprehensive and timely, for not only does it cover the many aspects of this disease, but also it should serve to impress those who treat gastric conditions in the earlier stages with the necessity for obtaining an accurate diagnosis of the existing gastric pathology. It is only in this way that the question of the existence of carcinoma of the stomach may be decided at the most opportune time for successful treatment. Sir James's wide experience in the treatment of gastric conditions in general vests his statements with the hall-mark of authority, and the points which he stresses should be noted by all. It is, therefore, in no spirit of criticism that this letter is written, its object being to raise certain points which the gastroscopic examination of the gastric mucosa has demonstrated, and which have a most important bearing on the subject.

Mention is made by Sir James as to the value of gastroscopy in the early diagnosis of gastric carcinoma; but his remarks suggest that its application is limited, and that there is a danger of valuable time being lost by frequent gastroscopies being carried out before a positive diagnosis could be made with certainty. I am sure that all experienced gastroscopists would join issue with this contention. The routine use of the gastroscope in the investigation of gastric pathology has shown again and again that an early carcinoma was present when the history of the case was inconclusive and when careful radiological examination had failed to reveal its presence. Furthermore, it is most unusual for an experienced gastroscopist to require frequent examinations in order to establish a diagnosis of carcinoma. As is similar in conditions of other organs of the body, certain cases are frankly carcinomatous; other cases are not; while the intermediate or indeterminate group will vary in number according to the experience and ability of the investigator concerned.

It is a practical fact that the presence of a large palpable tumour in the stomach makes gastroscopy unnecessary and inadvisable, not only on account of the difficulty of making a thorough examination of the stomach, but also on account of the very real danger of damaging the friable stomach wall present in cases of this nature. It is, therefore, in early cases of suspected gastric carcinoma that gastroscopy is so helpful. With the flexible gastroscope it is a safe procedure and associated with very little discomfort to the patient. The examination can be carried out quickly and inexpensively, and in the vast majority of cases the findings are conclusive, as Sir James Walton himself has experienced at the London Hospital.

But it is not only with regard to early and accurate diagnosis that gastroscopy is assisting the gastric surgeon. By the correlation of the appearances of the gastric mucosa and abnormal gastric functions, both motor and secretory, and careful inquiry into the patient's previous history, especially with reference to the existence of any severe or prolonged infective state, a much greater knowledge of gastric pathology and of the aetiology of gastric conditions is being developed as more and more evidence is obtained by gastroscopic examination—a knowledge based on the sounder foundation of fact rather than empirical hypothesis. The term "gastritis," which for so many years has been applied to a variety of stomach conditions without any great common feature, for want of a better classification, has now taken on a very real and definite meaning; and the part played by long-standing atrophic changes of the gastric secretory mechanism in the production of a gastric carcinoma and certain blood diseases can now be assessed with greater and greater accuracy.

I have seen many carcinomas of the stomach, particularly primary malignant ulcers, in the pyloric and pre-pyloric regions of the stomach without any visible evidence of alteration in the gastric mucosa of the pyloric antrum, body, or fornix. Although microscopical changes in the form of round-cell infiltration might conceivably have been present in the submucosa of these particular stomachs, the fact remains that by all gastroscopic standards there was no fragment of evidence to justify the opinion that atrophic or hypertrophic gastritis was present or that the gastric mucosa was other than normal. Furthermore, it should be noted that in these cases there was no diminution in the gastric acidity.

It is a fact, which is not appreciated sufficiently, that the gasric mucosa is a highly specialized and functioning secretory organ under the control of a most carefully balanced nervous mechanism; and just as the highly specialized parenchyma of the kidney is liable to damage during acute generalized infective states, so also is the gastric mucosa. It is no mere coincidence that in the investigation of cases of achlorhydria associated with greater or less degrees of atrophic gastritis, particularly in younger subjects, it is always possible to obtain a history of some very acute infective disease during their lifetime; the onset of gastric symptoms has dated from the period following convalescence. I have the record of twenty-seven cases which will form the basis of a paper to be published shortly. Not every case of scarlet fever gives rise to nephritis, nor is the stomach always involved during the course of an acute infection. The main point is, however, that the atrophic changes in the gastric mucosa are *secondary* rather than primary; and while it is agreed that carcinoma may develop somewhere on an atrophic gastric mucosa, it may and frequently does develop somewhere on a normal one. In the terminal phases, when the growth is well established or when the early establishment of pyloric obstruction has brought the patient to operation, atrophic changes in the gastric mucosa will invariably be present, but here again the atrophic changes are secondary. Thus a carcinoma of the stomach may develop in a gastric mucosa which shows no naked-eye appearances of atrophic gastritis or other type of inflammation of the gastric mucosa. As the condition advances atrophic changes will develop and arise from the effect on the gastric mucosa of the general wasting and toxic absorption associated with malignant disease in general. Carcinoma of the stomach may also arise in a gastric mucosa which has already undergone atrophic changes as a result of previous damage from whatever cause during the course of the patient's lifetime. It cannot be assessed at the present time whether the former type is less malignant than the latter or whether there is any difference in the character of the growth or location in the stomach.

I cannot agree that the recognition of atrophic gastritis is an indication for advising a partial gastrectomy on the grounds that a carcinoma of the stomach might develop at some future date. It is advisable, however, that known cases of atrophic gastritis should be examined gastroscopically from time to time if the development of a carcinoma is to be recognized as early as possible. Nor does this apply to cases of atrophic gastritis alone, no matter what figures are quoted, and in reality figures mean very little when compared with the true end-results of treatment. The successful issue of any case of gastric carcinoma will depend on the period of its existence when it is first recognized or treated. If all cases of persistent gastric dysfunction were submitted to an efficient gastroscopic and radiological investigation the ravages of this horrible condition could be controlled to a much greater degree than exists at the present time.

For those who are engaged in the study of gastric disease the questions of aetiology, pathology, and symptomatology will always have a profound interest; but to those whose duty it is to visit the sick in their homes or to attend them in consulting rooms there should be but one object when dealing with a gastric case with persistent symptoms: "Is this case one of carcinoma?" In the past radiological evidence has not been sufficient; now gastroscopy can offer so much. Should it, therefore, be reserved only for the difficult case, or should it become the routine method of investigation?—I am, etc.,

Bournemouth, Dec. 13. LLOYD OLVER.

Cause of Peptic Ulceration

SIR,—In appreciation of Dr. James Ronald's interesting article on the value of therapeutic measures in duodenal ulceration Sir Adolphe Abrahams in his very elegant letter (*Journal*, December 2, p. 1112) reiterates the fact that peptic ulcers heal up when the patient is confined to bed for three weeks and agrees with Dr. Ronald that hyperchlorhydria cannot be responsible for the causation of peptic ulcer since he has demonstrated that ulcers have healed in cases in which the acid index has actually risen during the period of healing. Agreement is mutual in the fact that a carefully selected but extended diet does not detract from the healing process, but indeed materially assists by giving greater strength to the patient in place of the semi-starvation usually imposed upon these unfortunate people.

From this it may be concluded that neither the presence of excess of acid nor the taking of a generous diet interferes with the healing of the ulcer, so it is therefore certain not to have been caused by either the one or the other. Bearing these findings in mind, the act of lying in bed in the recumbent position must play a direct part in the healing process. To what, then, is this due? Sir Adolphe, among other things, suggests that peptic ulcer may be influenced if not actually caused by mental worry, and that the three weeks in bed acts as a soothing factor to the nervous system and thus promotes healing.

This does not coincide with one's usual experience, because three weeks of physical inactivity is not likely to relieve the anxieties of a mentally worried business man but rather to add to his mental trouble; moreover, it is an undoubted fact that many of these cases relapse within a variable but usually short period of time after the patient resumes his ambulant activities. It therefore appears that the recumbent position assumed in bed is a causal factor in the healing process. Since the ulceration is in the stomach or in the duodenum one naturally turns one's thoughts to the connexion between the recumbent position and its influence upon these parts. When it is remembered that the ulceration takes place during the time the patient is ambulant and heals up when he is confined to bed the suggestion that posture is a possible causative factor is forced upon one, since the confinement appears to be the *sine qua non*.

For a number of years I have had the opportunity to observe from a radiographic point of view the stomach, duodenum, and other abdominal organs of patients suffering from peptic ulcer and have also had the privilege of treating a large number of these cases.

It is, I think, universally agreed that peptic ulcer is nearly always situated in much the same locality in the stomach or duodenum—in the stomach upon the lesser curvature near the pyloric end, and in the duodenum at the junction of the first and second parts of that organ. Radiographic examination reveals the fact that nearly all of these patients suffer to a greater or less degree of middle-line or right-sided colonic ptosis. The fall of the colon when the patient is in an erect position imposes a pull upon the greater curvature of the stomach through the fused omentum. This pull upon the stomach is resisted by it. The stomach is fixed at two points—at the cardiac end and at the junction of the first and second parts of the duodenum; the line of maximum pull is therefore upon the lesser curvature between these points, and is observed to be in the position where gastric ulceration usually takes place—near the pyloric end of the lesser curvature, where the curve can often be seen to be almost an acute angle—and in the case of duodenal ulcer at the junction of the first and second parts where duodenal ulcer is usually seen. At these points mechanical circulatory obstruction takes place with subsequent ulceration. When the patient assumes the recumbent position this drag is relieved by the influence of gravity upon the abdominal organs, which resume their normal position, and the mechanical interference with the circulation no longer exists.

This will explain the initial causation of ulceration by the assumption of the erect position and its healing in recumbency, and its subsequent recurrence, if steps be not taken to prevent it, when the period of recumbency is ended. It will also explain why excess of acid is not its causation nor a restricted diet a factor of hindrance to its healing, but will, I submit, bring forward the suggestion that the causation of peptic ulcer is a mechanical interference with the circulation due to the drag of gravity upon an uncorrected colonic displacement.—I am, etc.,

London, W.1, Dec. 6. CHRISTOPHER KEMPSTER.

Sternal Puncture in Lymphatic Leukaemia

SIR,—Dr. M. C. G. Israëls's article on the value of sternal puncture in the diagnosis of atypical cases of lymphatic leukaemia (*Journal*, December 9, p. 1132) is of much importance, but his series of five cases does not include an example of the most puzzling and most easily overlooked variety of the disease.

I refer to those aleukaemic cases in which symptoms and signs of severe anaemia dominate the clinical picture, while the blood shows severe (usually orthochromic) anaemia, without signs of blood regeneration, and intense leucopenia. The picture is that of aplastic anaemia, and no enlargement of lymphadenoid tissue can be detected. I recently (by the courtesy of Sir Maurice Cassidy and Dr. Meek of Mill Hill) saw such a case in a man of over 60 who had no signs of lymphatic leukaemia. Admittedly there was a certain amount of controversy concerning some of the mononuclear cells in his blood, as I contended that a few were lymphoblasts, whereas another haematologist who had seen the films would not agree that these rather large cells were immature types. There was one point that militated against a diagnosis of aplastic anaemia—blood transfusion caused only the most transient rise in the number of red corpuscles, so that it seemed certain that haemolysis was occurring.

The diagnosis became clear when films of material from sternal puncture were examined, because about 30 per cent. of the cells were large mononuclear elements with coarsely reticulated nuclei in which nucleoli were easily visible. These cells, which were regarded as being lymphoblasts, did not give the oxidase reaction. The case was, then, one of aleukaemic lymphatic leukaemia (aleukaemic lymphadenosis) of the type that used to be known as the medullary form of pseudo-leukaemia. It is in cases such as this that sternal puncture is of outstanding value for diagnosis, and it is probable that, if this small operation were carried out on all cases suspected of being examples of aplastic anaemia, more diagnoses of aleukaemic (medullary) leukaemia would be made.

Dr. Israëls mentions that he has seen lymphocytosis in the marrow in "glandular-fever- and aplastic-type anaemia," but he does not say that he has ever seen infiltration of the marrow with many lymphoblasts in these diseases. It is of course possible that some of the "aplastic-type anaemia" cases were really examples of medullary pseudo-leukaemia.

It is high time that a monograph in English should deal with sternal puncture, but one fears that the times are not propitious for such a venture, for even publishers must live.—I am, etc.,

London, W.1, Dec. 13. A. PINEY.

Test for Vi Antibody

SIR,—In your review of the memorandum on typhoid fever[1] issued by the Ministry of Health (*Journal*, December 2, p. 1124) you took note of the statement that the modification of the Widal reaction suggested by me, in which the blood is tested for Vi antibody, is not yet regarded as a practicable procedure for routine detection of carriers. It is evident that the memorandum had been prepared at a time when the technique of the Vi agglutination reaction was not yet fully described. A full description was published a year ago,[2] so that the statement in the memorandum is now out of date.

A standard agglutinating Vi serum and a preserved suspension representing a pure reagent for the Vi antibody are now available. The former has been made at the Lister Institute, and the latter is being prepared from Bhatnagar's[3] Vi strain by Lieutenant-Colonel R. F. Bridges at the Oxford Standards Laboratory of the Medical Research Council. The two reagents are obtainable from the Standards Laboratory, and the test for Vi antibody has thus become a practicable routine procedure.—I am, etc.,

Lister Institute, London, S.W.1, Dec. 12. A. FELIX.

"Lady Nicotine"

SIR,—Referring to the annotation "Lady Nicotine" in the *Journal* of December 2 (p. 1098) the following short piece of research work may be of interest:

While serving in the last war as a lieutenant in the R.A.M.C. I found myself in charge of a ward of some twenty-four Australians and New Zealanders convalescent from typhoid. Most of them had been there week after week running pulses over 100 a minute. The Red Cross brought round cigarettes at, I believe, 7.30 a.m. each day, and the patients smoked almost without stopping till 7 or 8 p.m. As there seemed to be no reason for the tachycardia, I was bold enough to knock off smoking for the whole ward for a week, and, with a little persuasion, obtained the co-operation of the men in the matter. At the end of the week there was only one pulse over 100, and nearly all of them were quite normal.

My own experience with functional and psychological conditions of many kinds (I was seeing between 5,000 and 6,000 a year at the end of the war and for a time after) has convinced me that cigarette smoking tends to increase or produce insomnia, restlessness, and irritability, while pipe smoking, if severely indulged in, seems to produce depression. It is naturally impossible to formulate a rule on the result of one case, but I well remember a barrister who week after week made no progress but remained depressed; he was an inveterate pipe smoker. At last I persuaded him to give up smoking, which he did by rapid reduction of the number of pipes smoked each day, and he went straight ahead and got well.

The large gifts of cigarettes now being sent out to the troops may be very doubtful benefits, both from the standpoint of health and of actual physical condition for military service, for plenty of athletes give up smoking during training.—I am, etc.,

Chorley Wood, Dec. 11. CLAUD F. FOTHERGILL.

Desmoid Tumour of the Abdominal Wall

SIR,—In your issue of September 16 (p. 606) Mr. E. W. Bintcliffe describes a case of large desmoid tumour of the abdominal wall. My interest lies in his difficulty in closing the gap left by the removal of the tumour. In 1924 I operated upon a similar case in which a gap in the muscular wall of about three inches diameter was left by the excision. To fill this I used a method which I had devised for the closure of unusually large herniae—the swinging into the gap of the tensor fasciae femoris with nervous and vascular supply preserved intact (*Brit. J. Surg.*, 1924, **12**, 28). The result was completely satisfactory. The woman has had a child since and the abdominal wall has remained sound.—I am, etc.,

Auckland, New Zealand, Nov. 22. KENNETH MACKENZIE.

Lymphatic Leukaemia

SIR,—In reading in the *Journal* of December 9 (p. 1132) Dr. M. C. G. Israëls's article on lymphatic leukaemia I found myself at a loss to know on what grounds he arrived at a diagnosis of lymphatic leukaemia in Case IV—a platelayer aged 55 who complained of lassitude, etc. In this case the blood count was 2,480,000 R.B.C. (described by Dr. Israëls as "a moderate anaemia") and the colour index 1.08. Would a general practitioner be considered as committing an unpardonable diagnostic error in thinking this to be a case of pernicious anaemia and prescribing intramuscular and/or intravenous injections of some such preparation as neohepatex? May the improvement ascribed in this case to iron and arsenic therapy not merely be an intermission in pernicious anaemia?

I should also like to know why the anaemia of Case I (R.B.C. 2,570,000) is described as "a moderate anaemia" and that in Case II (R.B.C. 2,470,000) as "a rather severe anaemia." I would also ask Dr. Israëls if the increased cellularity of the marrow in Case V is not rather a slender reason for regarding it as a lymphatic leukaemia when the Wassermann reaction is positive. Why should this not be regarded merely as an anaemia secondary to syphilis?—I am, etc.,

Wrexham, Dec. 12. A. WESLEY HILL.

Treatment of Varicose Ulcers

SIR,—Dr. Stuart McAusland being the head of a well-known ulcer clinic in the north, I feel a natural diffidence as a general practitioner in replying too dogmatically to his criticisms (*Journal*, December 9, p. 1164) of my letter on the treatment of varicose ulcers in the *Journal* of November 25. However, in the circumstances I feel bound to make the following observations:

1. The leg ulcers preceded by a definite interval the appearance of the boils in the groin and axilla.

2. As regards syphilis, admittedly no Wassermann was done, but the patient did not show any of the usual stigmata of syphilis, and the ulcers were excessively painful and cleared up rapidly on the institution of the (non-antisyphilitic) treatment described in my letter.

3. The rationale of the occlusive bandage treatment is, I believe, (*a*) the cutting off of the blood supply to the ulcer, thereby inducing it to heal; and (*b*) the mobilization, in response to the imprisoned septic products, of the patient's defence forces. With regard to (*a*), this treatment in the case of callous indolent ulcers with only a little serous discharge exuding from them, and with floors which are showing signs of attempting to granulate, is no doubt quite effective. I admit that I have cured some obstinate ulcers in this way, but when there is much septic discharge it seems to me to be bad treatment to keep it pent up in the tissues. If the contrary is the case, what is the object of ever incising an abscess? As regards (*b*), how, with the circulation and vitality of the part already impaired by the varicose condition, can the defence

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[1] Ministry of Health Memorandum on Typhoid Fever. Memo. 225/Med. 1939. H.M. Stationery Office. (Revised edition.)

[2] Felix, A. (1938). *J. Hyg.*, **38**, 750.

[3] Bhatnagar, S. S. (1938). *British Medical Journal*, **2**, 1195.

forces be stimulated by the presence of a considerable quantity of imprisoned pus and micro-organisms? Far more likely that they would be hopelessly outnumbered, as I am convinced in numerous cases (including the one described in my letter) that they actually are.

May I add, in conclusion, that a number of practitioners with whom I have from time to time discussed this question hold views similar to mine.—I am, etc.,

Leamington Spa, Dec. 11. J. R. A. Davies.

Virtues of "Brown" Bread

Sir,—Dr. Geoffrey Taylor's proposal in your issue of November 18 (p. 1022) that the British Medical Association "urge the Government to bring in measures to encourage, if not to enforce, the eating of brown bread by everyone, at least during the war," overlooks a number of important facts. First, not all "brown" bread is rich in vitamin B, for the vitamin is contained in the wheat germ, and "brown" bread often differs from white bread only in containing bran. Secondly, the general use of brown bread would eliminate an important source of animal feedstuffs, which are converted into animal foods consumed by man and containing vitamin B. There would be no net gain and there would probably be loss in the amount of vitamin B available. Thirdly, in a considerable number of cases the roughage in brown bread is irritating to the colon, and is probably a contributory factor in producing colitis. Fourthly, diets of the people of India are so restricted and otherwise poor in vitamin B owing to lack of animal foodstuffs that it is legitimate to advocate consumption in India of bread containing the germ of whole wheat. But it does not follow that McCarrison's work can be used to support similar measures in England.—I am, etc.,

Geneva, Nov. 30. E. F. Penrose.

Sir,—I should like to endorse the opinions already expressed in your correspondence columns on the value of whole-meal flour, by which I mean flour which represents the whole of the wheat berry. I conceive it to be the duty of the whole profession to urge the use of this flour upon the nation at the present juncture. That the general public are ready to take up the question I have ample proof in the mass of correspondence with which I have been flooded following a letter to the *Times* on November 21.

In order to buy back from the millers that which should never have been taken out the public have to pay six or seven times the cost of the wheat germ in order to recover the vitamin and mineral content in the shape of patent foods. Since writing to the *Times* I have discovered one firm which supplies flour representing the whole wheat berry; the address is: Messrs. John Wright (London), Ltd., 98–102, Bermondsey Wall, London, S.E.16. I did not know that such flour was obtainable previous to my original letter to the *Times*, and used to have bread made for my own household from wheat germ and whole-meal flour according to a recipe originally taken from correspondence in the *Journal* some time ago, which I would suggest should be republished for the information of those interested.—I am, etc.,

Lancaster, Dec. 11. C. J. Stocker.

Sir,—Your correspondent, Dr. Arthur King, of December 9 (p. 1164) states that in England the "colour prejudice" against brown bread is most pronounced among the poor and uninformed. If he were a housewife he would know the reason why—that brown bread is more expensive than white. Until this fantastic state of affairs is remedied there is little hope of inducing the "poor and uninformed" to eat brown bread instead of white. Individual denunciation is of little avail in such a case, but suitable action by the British Medical Association might well reverse the situation.—I am, etc.,

Cardiff, Dec. 11. M. Grace Eggleton.

Tuberculosis in the Last War

Sir,—Your article entitled "A Nation in Good Health" (December 16, p. 1191) seems misleading in its statement that "tuberculosis notably declined during the [last] war." It is true that the number of fresh notifications of the disease received in 1913 was higher than in any subsequent year, but this perhaps is to be explained as the first effect of the Tuberculosis Regulations (1912), which enlarged the basis of notification by including non-pulmonary disease. During the period 1914–18 the death rate from tuberculosis substantially increased, and the downward tendency that had been observed for several decades was reversed. In 1918 the standardized death rate for pulmonary tuberculosis was higher than that touched twenty-five years previously. Similar increases were seen in other belligerent countries. That this was a consequence of the war is shown by the fact that the death rate fell rapidly after 1919. Tuberculosis is pre-eminently a disease which flourishes under the conditions of war.—I am, etc.,

London, W.C.1, Dec. 18. Harley Williams.

Obituary

With the death of Dr. **Keith Robertson** on December 8, aged 61, the burgh of Greenock has lost one of its best known and highly esteemed practitioners. He had been in active practice till a month before. A native of the town in which he spent his active life, he was the son of the late Dr. J. K. Robertson. He graduated M.B., Ch.B. at Edinburgh University in 1901, and proceeded M.D. four years later. After graduation he served for a term as house-physician in Glasgow Royal Infirmary. Later he took charge of about 400 cases of small-pox under the Greenock medical officer of health during an epidemic. Shortly after this he settled in general practice in Greenock, and became attached to the Eye Infirmary, where he was assistant surgeon for many years. But throughout his career his chief interest was in ear, nose, and throat work. In this connexion he assisted the late Dr. Robert Fullarton till 1920, when on the latter's retirement he assumed charge of the Greenock Ear, Nose, and Throat Institution. Here he gave splendid service, and under his direction the work was greatly developed. At the time of his death a new and commodious hospital for ear, nose, and throat cases was nearing completion, and he was eagerly looking forward to the improved facilities to be provided there. For several years he was medical officer for diseases of the ear, nose, and throat to Renfrewshire Education Authority. Dr. Robertson served for a time in Greenock Royal Infirmary as assistant surgeon, and was at the time of his death honorary consulting surgeon for diseases of the ear, nose, and throat. From 1907 he held the office of medical officer to Sir Gabriel Wood's Mariners' Asylum. He was an active member of the British Medical Association, and for three years (1934–7) was chairman of the Renfrewshire and Buteshire Division. He was also one of the original members of the Scottish Otological and Laryngological Society. The St. Andrews Ambulance Association had in Dr. Robertson an active worker, and he also took part in training V.A.D.s. Lately he was engaged in A.R.P. work. Dr. Robertson will be greatly missed by his colleagues and a large circle of patients. He was earnest and conscientious in all he undertook, and gave of his best to all who called for his services, rich and poor alike. He was deeply attached to Trinity Church, where he had been an elder for twenty-nine years.

Dr. **Martin Randall**, who had long practised with great success at Wimbledon, died in retirement at Haslemere on December 7, aged 71. He studied first for the teaching profession, and took the B.A. of London University in 1887; he then turned to medicine and entered University College Hospital Medical School, taking the English Conjoint diplomas and the

M.B. with first-class honours in 1892, the M.D. in 1894, and the F.R.C.S. in 1895. At University College he had been assistant demonstrator of anatomy and Atkinson Morley surgical scholar. After qualifying he was house-surgeon at U.C.H. and at the Bristol General Hospital. On his retirement from practice in 1931 Dr. Randall was made an honorary consulting surgeon by the Nelson Hospital, Wimbledon, where he had been a member of the active staff since its foundation; and University College, London, elected him one of its Fellows. He joined the British Medical Association in 1893. By his fellow practitioners Dr. Randall was held in high esteem and affection. One of them writes: I came to know what a lovable and fine character he possessed: so capable, so curiously shy and retiring till you gained his confidence; the blue eyes with the searching and steady glance expressed his character—honesty, loyalty, uprightness. He was a born surgeon, resolute, careful, and thorough, with sound judgment and hands to carry out his purpose as a fine craftsman.

Universities and Colleges

UNIVERSITY OF OXFORD

At a Congregation held on December 16 the following degrees were conferred:

D.M.—*L. T. Ride.

B.M.—E. J. L. Lowbury, A. N. Guthkelch, J. C. Hill, E. J. Wood, H. M. Balfour, J. C. Ryle, R. W. Tibbetts, I. C. B. Pearce, E. Smith, J. J. Brenner, K. F. Wilsdon, *D. H. Swayne, D. H. Davies.

* By proxy.

UNIVERSITY OF CAMBRIDGE

The Vice-Chancellor has appointed Sir Augustus Moore Daniel, K.B.E., M.B., Hon. Litt.D., of Trinity College, formerly Director of the National Gallery, to be Rede Lecturer for the year 1940. The place and subject of the lecture will be announced later.

UNIVERSITY OF BRISTOL

J. S. W. Little has been approved at the examination for the degree of M.D.

UNIVERSITY OF ABERDEEN

At a graduation held on December 13 the following medical degrees, etc., were conferred:

M.D.—Esther Hendry (awarded commendation for thesis).

M.B., Ch.B.—I. A. Angus, A. G. Beattie, J. H. Begg, G. R. Bernard, R. S. Dewar, W. F. Dickie-Clark, F. A. Forbes, E. Fowler, J. C. Fraser, J. Gauld, C. W. Hossack, A. L. Hughes, G. E. Johnstone, M. J. Mackenzie, J. G. Moir, Elizabeth J. B. Orr, R. W. Panton, C. W. Petrie, W. F. Russell, J. H. Scott, A. C. B. Singleton, K. Smith, G. P. Wallace, A. M. Watson, W. G. R. Wilson, C. C. Wright.

D.P.H.—R. M. Gordon, J. Warrack.

UNIVERSITY OF EDINBURGH

A graduation ceremonial was held in Examination Hall B on December 15, when the following degrees, etc., were conferred:

M.D.—L. W. Brown, Captain R.A.M.C. (*in absentia*), W. N. Campbell (*in absentia*), A. H. Crichton, †J. N. Davidson, ‡L. V. Knutson, ‡R. A. H. Krynauw (*in absentia*), A. U. MacKinnon, Lieutenant R.A.M.C. (*in absentia*), J. H. D. Millar, Lieutenant R.A.M.C. (*in absentia*), P. T. Northover, ‡Beatrice A. S. Russell (*in absentia*), *A. C. White, ‡J. F. Wilson, Captain R.A.M.C. (*in absentia*).

M.B., Ch.B.—J. R. Allan, J. L. Anderson, R. Barrie, N. C. Baskett, Elizabeth G. Batters, F. W. Belford, I. R. Bindman, G. M. F. Bisset, J. Breckenridge, L. S. Bruce, B. Carr, D. Crichton, B. G. Daly, S. W. Davidson, A. R. Duff, R. M. Ellison, P. M. Fea, W. M. Ferguson, J. S. Fraser, W. A. Glen, W. M. Grant, J. H. Higgins, A. R. Hodgson, M. Homayun, E. L. O. Hood, W. Huey, W. W. Hutton, Helen S. Lauder-Thomson, N. G. Lindsay, R. N. Littlewood, C. T. MacDonald, H. J. M'Pherson, F. K. Matheson, W. C. Menzies, W. B. Nelson, J. Robertson. A. F. Rutherford, J. L. Shanks, J. L. Sinette, G. H. Stuart, W. B. Thorburn, Thelma G. Townson (*in absentia*), K. R. H. Wardrop, J. L Washington.

D.P.H.—I. A. G. MacQueen.

Ph.D. (Faculty of Medicine).—S. C. Das (*in absentia*).

* Awarded gold medal for thesis. † Highly commended for thesis. ‡ Commended for thesis.

QUEEN'S UNIVERSITY, BELFAST

The following candidates have been approved at the examination indicated:

M.B., B.Ch., B.A.O.—J. J. Black, J. McAnallen, W. E. C. McCullough, R. K. McElderry, W. J. McLeod, D. Rooney, Henrietta H. Scott, T. M. Shannon, C. D. Stewart, R. H. Trinnick, W. L. Uprichard.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At an ordinary meeting of the Council, held on December 14, with the president, Mr. Hugh Lett, in the chair, a resolution of condolence was passed on the death of Mr. Wilfred Trotter. The Council accepted with grateful thanks the offer of Mr. Herbert Olivier to present to the College a replica of his portrait of Mr. Wilfred Trotter.

It was decided to alter the time of the Hunterian Lectures to be given in 1940 from 5 p.m. to 3 p.m.

It was reported that the special trustees of the Prophit Trust had renewed the cancer research studentships of Dr. L. H. Gray and Dr. C. A. P. Wood for the year 1940.

Diplomas

A diploma of Membership was granted to Harry Vernon Reeves.

Diplomas of Fellowship were granted to the following thirty-one candidates:

N. A. Miller, R. Parkinson, M. P. Morel, P. W. Houghton, H. H. F. Barns, C. G. Rob, J. C. Coates, J. Ll. D. Roberts, J. S. Horn, R. L. Lamming, C. J. Longland, A. J. Heriot, S. H. Raza, Alice J. M. T. Barnes, W. P. Greening, C. P. Sames, D. M. Thomson, P. A. Menon, S. S. Anand, J. R. Barbour, A. C. Belfield, J. O. Corbin, K. Das, D. M. Douglas, K. T. Goldswain, B. C. Hardy, J. W. Horsley, C. J. D. Langton, J. F. Lipscomb, Riyaz-I-Qadeer, T. F. Rose.

Diplomas in Anaesthetics were granted, jointly with the Royal College of Physicians of London, to the following twenty-three candidates:

R. D. N. Bisset, F. K. Boston, Dorothy M. Braddock, I. G. Braddon, Elizabeth M. Corbin, T. F. Crowley, Charlotte S. Dafoe, E. W. Dunkley, G. H. Ellis, F. G. Ethiraj, Margaret Forbes, G. P. Fox, H. Gillies, P. Glazer, C. A. Hayes, A. L. St. A. McClosky, W. M. Maidlow, Beryl M. Mason, B. M. Phillips, T. B. Pitts, N. F. Sahor, R. N. Sinclair, B. N. Sircar.

Medical News

At the reopening ceremony of Paris University, which took place in the presence of M. Albert Lebrun, President of the French Republic, and M. Yvon Delbos, Minister of National Education, Sir Humphry Rolleston and Dr. Philip Roy, formerly Minister of Canada at Paris, were made honorary doctors.

Sir Bernard Docker has accepted the invitation of the Council of the British Hospitals Association to become its chairman in succession to Sir Harold Pink. He has been closely identified with the interests of the voluntary hospitals through his association with the Westminster Hospital, London, and the Birmingham Children's Hospital.

A meeting of the general purposes committee of the International Society of Medical Hydrology was held in London on November 17 to deal with emergency measures made necessary by the war, and also by the death of the society's chairman of council, Dr. E. P. Poulton. By the unanimous vote of the members present and of all those abroad who could be reached by post, Dr. J. Barnes Burt was elected chairman of council until such time as the whole council could meet, and the general purposes committee was strengthened by the appointment of four additional vice-chairmen, all in countries "neutral" in the present conflict. It was further resolved that the cash balance remaining should be set aside for reconstruction of the society after the war, and the general secretary was given indefinite leave of absence without pay and instructed to close the London office. This has now been done and the society's address will be, until further notice, that of the hon. treasurer, Dr. G. D. Kersley, 6, The Circus, Bath.

Mr. S. Ingleby Oddie, who graduated M.B., C.M. at Edinburgh in 1891 and afterwards practised at the Bar, retired on December 18—his seventieth birthday—after twenty-seven and a half years' service as coroner in Central London. At a farewell ceremony Mr. Oddie said that nearly 50,000 deaths had been reported to him, and he had held inquests on 20,000. He was the last coroner to be appointed by the Dean and Chapter of Westminster and the last coroner for the City and Liberty of Westminster, a franchise coronership abolished in 1930. Sir Bernard Spilsbury spoke of Mr. Oddie's skill in the examination of witnesses, and stressed the importance, in large towns particularly, of having coroners with a thorough medical training.

Sir Sidney Clive, recently Director of Personal Service at the War Office, is directing a Red Cross commission in France. He has consulted the Adjutant-General and the Director-General of the Army Medical Services of the B.E.F. so that the Red Cross war organization may undertake those duties which are allotted to it.

The American officers of the international congress have decided that in view of the present world situation it is advisable to postpone to an indefinite date the fifth International Congress of Paediatrics, which was to have been held in Boston, Massachusetts, U.S.A., on September 3, 4, and 5, 1940.

Mr. Godfrey Heathcote Hamilton will retire from the secretaryship of the National Hospital for Diseases of the Nervous System, Queen Square, W.C., at the end of the year, having served the hospital for nearly thirty-eight years.

With the exception of Strasbourg all the French medical faculties reopened on October 18. Of the 28,000 doctors in France 77 per cent. have been mobilized, and only 6,000 doctors are kept for civilian practices.

The King's Medal for the best shot in the Canadian Army has been won for the sixth time by Captain D. T. Burke, of the Canadian Army Medical Corps, who won the King's prize at Bisley in 1924 and tied for it in 1929.

Dr. Alfred Fröhlich, formerly professor of pharmacology in Vienna University, whose name has been given to the adiposo-genital syndrome, has been appointed pharmacologist to the May Institute for Medical Research of the Jewish Hospital, Cincinnati.

Professor Angel Roffo, director of the Cancer Institute of Buenos Aires, has been made an Officer of the Legion of Honour at a ceremony when the French Ambassador presented him with a cheque for 100,000 francs for the foundation of a fund for the study of cancer.

M. van den Meulebroeck, the successor of the heroic M. Max as Burgomaster of Brussels, is a medical man.

The Department of Scientific and Industrial Research has now published No. 10 of its leaflets on Methods for the Detection of Toxic Gases in Industry, to which reference has been made in these columns from time to time. The present leaflet is devoted to chlorine (H.M. Stationery Office, 3d.). The greatest risks of exposure to chlorine gas are during its manufacture and use in industry, and generally as the result of accidents in which large quantities of the gas escape from cylinders or other containers.

During 1938 the mortality rate in the New York City hospitals for contagious diseases fell to 1.8 per cent., the lowest to date. In 1937 it was 2.2 per cent. This figure compares favourably with a 4 to 6 per cent. mortality in general hospitals. There were 2,109 cases of whooping-cough admitted to hospitals in 1938, or more than for any year in the last two decades. Of all the cases of diphtheria notified to the Health Department in 1938, 43.7 per cent. were hospitalized, while 31 per cent. of the scarlet fever cases, 8.4 per cent. of the measles cases, and 16.1 per cent. of whooping-cough patients were sent to city hospitals.

According to official statistics the population of Japan on October 1, 1938, was 72,227,700, or 969,000 more than in the previous year. The most populous city is Tokio, with 6,457,000 inhabitants.

Medical Notes in Parliament

On December 14, before Parliament adjourned for the Christmas recess, the Royal Assent was given to the Postponement of Enactments (Miscellaneous Provisions) Act, which provides that the House-to-House Collections Act will come into force on March 1. An Order in Council approving amendments of the Regulations of the Dental Board of the United Kingdom has been presented to Parliament.

Milk Consumption

On the motion for the adjournment, on December 14, Mr. Tom Williams opened a debate on milk prices. He said the Milk Marketing Board had asked the Central Milk Committee to agree to an increase and 4d. a gallon had been mentioned. Such an increase must reduce consumption and the working classes would suffer. After five years of operation the Milk Marketing Board had increased the price by 2½d. per gallon, or, allowing for the distribution margin, 2.65d. per gallon. The Government should use the machinery and finance, if necessary, to keep the price within the purchasing power of the people.

Mr. W. S. Morrison said all parts of the House agreed on the need, in war even more than in peace, for securing an adequate supply of milk at reasonable prices. If war conditions were superimposed on peace-time commercial practice it would be necessary for the Government to assume responsibility for milk policy during war time as regards production, price, and distribution. There had been since the war no rise in the price of liquid milk for ordinary consumption in spite of a short supply of feeding-stuffs. Liquid milk consumption had declined, and one reason was that the milk-in-schools scheme was dislocated. Milk which in peace would have been sold for the scheme at prices like 1s. a gallon had been diverted to butter at 7d. a gallon. The Ministry of Food decided that an increase in the producers' returns was justified, but was anxious to avoid a general rise in the retail price of liquid milk. The Ministry would make a temporary grant to the Milk Marketing Board in January, February, and March, to be passed to producers, on condition that the existing level of retail prices for liquid milk was maintained for the present. The grant would only be on milk sold for liquid consumption.

Mr. Haden Guest considered that there should be a programme of milk production, with a view to consumption, over the next three years. On the milk policy would depend the national reserve of child life. He cited the pioneer work of Dr. Harriette Chick, and the Report on the Physiological Bases of Nutrition prepared by an expert committee appointed by the Health Committee of the League of Nations. The scientific case for the increase of milk consumption was irresistible.

Dr. Summerskill said the Government, if the policy outlined that afternoon was followed, would not encourage the consumer to buy more milk. Professor Mottram had said that, if the health of the people was to be maintained in war, the consumption of milk should be increased. She asked whether the Government had taken steps to maintain the quality of the milk supplied. The most important customers of the Milk Marketing Board—the children—had been removed from the towns to the country, where there were no pasteurization plants. Dr. Elliot on a previous occasion had not denied that children in the country were drinking infected raw milk. Many of them would die from a death less spectacular than bombing but one which was insidious and certain. The Milk Bill which Dr. Elliot had introduced last Christmas had shown, though it was later dropped, that the Government held the views she had expressed.

Lord Apsley stated that an Edinburgh professor told him pasteurized milk so lacked nourishment that children fed on it became more liable to disease for that reason. If pasteurized milk were placed in a cup and a fly put a foot into it the milk would react to a tuberculin test. Only fresh good-grade A milk was of benefit to children. Dr. Guest said the Milk Marketing Board had reported that an experiment on 6,000 children with pasteurized and non-pasteurized milk showed the nutritional difference was insignificant. Mr. Montague said that by organizing the distribution of milk more cheaply a means could be found of increasing its consumption in the average poor family. The debate then ended and the House adjourned till January 16, unless required to assemble earlier for urgent business.

Domiciliary Treatment of War Casualties

On December 12 Mr. Denville asked the Minister of Health what precise agreement he had made with the British Medical Association in respect of the temporary domiciliary medical service which he proposed to establish for civilians who sustained war injuries in this country; and why no other medical organization like the Medical Practitioners' Union had been asked to co-operate. Dr. Elliot replied that he had arranged, in co-operation with the British Medical Association, that free domiciliary treatment should be available to war casualties in cases where further treatment was required after attendance at hospital, a fee of 16s. a year being paid to medical practitioners who gave this treatment in respect of any casualty not entitled to medical benefit under the National Health Insurance Acts. In accordance with established practice he consulted the British Medical Association as representing the general body of the medical profession.

On the same day Dr. Elliot also told Mr. Denville that details of the temporary domiciliary medical service for civilians, other than insured persons, who sustained war injuries when hospital treatment was not necessary or was impracticable would appear in a forthcoming memorandum. The scheme would apply to the whole of Great Britain, although there might be differences of detail in Scotland. It would be administered by his Department in England and Wales, and by the Department of Health in Scotland.

Unaccompanied Children: Doctor's Payments

On December 12 Mr. Groves asked the Minister of Health whether he would reconsider the arrangements relating to medical services whereby the remuneration of medical practitioners was dependent on a local emergency medical committee disbursing Government funds on such basis, whether capitation or attendance, as might be found convenient to the committee; and whether his Department, as responsible for the provision of the medical services, would deal with the expenditure and have it properly certified by the Exchequer and Audit Department. Dr. Elliot said he saw no reason for varying the arrangements made for the medical treatment of unaccompanied children evacuated under the Government scheme. The total amount payable for this service was determined by his Department on the basis of the number of unaccompanied billeted school children as indicated in returns received from local authorities, and the payment by the Department was subject to audit by the Exchequer and Audit Department. The distribution of the amount for each area among the doctors was dealt with by the Local Emergency Medical Committees, who would be required to send in periodical accounts which would be available for inspection by the Exchequer and Audit Department.

Increase in Unemployment Assistance

In the House of Commons on December 12 Mr. Assheton moved that the draft Unemployment Assistance (Determination of Need and Assessment of Needs) (Amendment) Regulations, 1939, should be approved. The regulations, he explained, increased the present rates by 2s. a week in the case of a man and wife, 1s. in the case of a member of the household of 16 years and over, and by 6d. of a child under 16. The rate of a person living alone would be increased by 1s. 6d. a week.

Mr. Grenfell said that the regulations contained no provision for improving the standard of living of the unemployed. No household dependent on these allowances, particularly where there were a number of young children, would be able to provide the standard of diet advocated by the British Medical Association or Sir John Orr. There would be 1,000,000 persons who could never get sufficient to eat or clothe them, or obtain decent housing accommodation. Dr. Edith Summerskill said that the Government concession was totally inadequate. She was a member of a local authority which administered many institutions for children, and when they were buying food in bulk for something like 200 or 300 children, in every instance with an eye to giving these children a nutritious diet, they could not cater for them at a cost of less than 6s. 6d. a week each for food alone. Was the Minister going to continue this system, or could the House hope that in perhaps a few months' time he would realize that it was in the best interests of the State to look after the next generation?

The draft regulations were approved.

Emergency Medical Service

Sir Ernest Graham-Little asked on December 14 what was the number of members of the honorary staffs of the voluntary hospitals who accepted the new conditions outlined by Dr. Elliot on November 23, and the number who returned to take up their duties as regards conduct of out-patient and other specialist departments and systematic education of medical students in the voluntary hospitals. He also asked whether the offer of transfer to this new scheme from any form of agreement previously accepted in individual cases covered those members of hospital staffs who were receiving the second grade of salaries for whole-time service. Dr. Elliot replied that to December 14 337 specialists and consultants had accepted the offer. He could not say how many of these returned to their normal duties. That was a matter with which he was not officially concerned. It was not suggested by the professional committee consulted that the offer of transfer should extend to members of the Emergency Medical Service receiving the second grade of salaries for whole-time service.

Sir Ernest argued that the reply which Dr. Elliot gave on this subject on November 23 had been understood to extend the offer of transfer to all voluntary staffs who had accepted full-time engagements. Dr. Elliot said he would again examine his answer. He would not evade carrying out any undertaking which he had given.

On the same date Sir Ernest Graham-Little further asked whether, in view of the necessity for maintaining the most experienced available surgical skill in London, where the first and most critical effect of any air attack must be expected, Dr. Elliot would revise the arrangements by which nearly all the most experienced surgeons awaited the expected casualties in centres remote from London. Dr. Elliot said the present arrangements, which were made in general agreement with the profession, provided for the bulk of the surgical treatment required by London air raid casualties being given by the more experienced surgeons at hospitals on the periphery of, but not necessarily remote from, London, and for the rapid transfer of the patients to these hospitals. These arrangements were designed not only to secure the most efficient treatment of the patients but also to avoid undue risk to highly skilled and irreplaceable personnel. He thought it undesirable to revise them further for the present. He was aware that a Spanish surgeon, in a recent lecture at the Royal Society of Medicine, had emphasized the primary importance of immediate surgical attention of the highest quality for air raid casualties. Plans for dealing with the matter were well advanced, but a hospital in the centre of a bombarded town was not always the best place to bring casualties.

Tuberculosis in Monmouthshire

Dr. Elliot's attention had not been called to a statement of the medical officer of health for the county of Monmouthshire to the effect that persons suffering from tuberculosis are dying because of the failure of the Welsh National Memorial Association to provide the requisite hospital accommodation.

He told Mr. Jenkins, however, on December 14 that the list of tuberculous patients for Monmouthshire, including Newport, awaiting admission to residential institutions included a large proportion of cases of the advanced hospital type. It was hoped to devote a proportion of the beds in the new hutted hospitals to reducing the waiting lists in the coming year, and he was keeping the whole matter under review.

Cancer Mortality in Wales and Monmouth

Dr. Elliot told Mr. Jenkins on December 14 that he had seen Press reports of a meeting of the Cardiff Public Health Committee at which a report was made to the effect that the mortality rate from cancer was rapidly increasing in Wales and Monmouthshire, and that the Welsh Board of Health and the regional commissioner had both refused to take any action for the establishment of a radiotherapeutic institute for the treatment of cancer. Dr. Elliot added that the Welsh Board of Health called a meeting of the local authorities concerned last year to discuss the provision of a radiotherapeutic institute for South Wales. It had not in any way discouraged those authorities from establishing such an institute. It was primarily for the authorities themselves to proceed with proposals for this purpose. Statistics of deaths from cancer, both in England and in Wales, had shown a continuous increase in recent years. Steps had been taken even during the present war to forward plans for dealing with this disease under the recent Cancer Act.

Bed Accommodation in Voluntary and Municipal Hospitals

Mr. Pritt asserted on December 14 that the number of emergency beds provided by the London County Council and other municipal authorities under the Emergency Hospital Scheme was much in excess of those provided by the voluntary hospitals, but that the former were not provided with anything like the same proportion of extra doctors and surgeons. Dr. Elliot replied that the number of beds available in municipal institutions was naturally larger than in voluntary hospitals. The proportion of medical staff enrolled in the Emergency Medical Service to casualty beds was higher in the voluntary hospitals than in the municipal hospitals, but in the latter the medical staff available for casualties included also a number of doctors in the employment of the local authority but not enrolled in the Emergency Medical Service. No useful conclusion could be drawn from a comparison between the respective proportions of beds to medical staff in the two types of hospital The medical staffing of a hospital included in the Emergency Hospital Scheme was governed by medical needs, and depended on factors such as the probable use and the arrangements with affiliated hospitals.

Notes in Brief

In October 1,500,000 gallons of milk were supplied in England and Wales for the milk-in-schools scheme, being over 60 per cent. of the rate of consumption before the war.

Plans were made in England and Wales for the evacuation of up to three million persons; some 1,230,000 persons took advantage of the scheme. It was estimated on December 14 that about 540,000 had returned to the evacuation areas.

Mr. W S. Morrison states that the largest producers vitaminize all their margarine, both cheap and dear

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

In England and Wales the more important notifiable diseases were rather less prevalent than in the previous week, with the exception of measles and acute poliomyelitis. In Scotland, on the other hand, there was an increase in the notifications for diphtheria, dysentery, cerebrospinal fever, erysipelas, and primary pneumonia. The incidence of dysentery had fallen in recent weeks, but rose last week from 28 to 41, of which 18 were in Edinburgh (11 last week), 8 in Dundee, 7 in Glasgow, and 4 in Aberdeen.

Whereas Scotland is correspondingly free from whooping-cough and measles, both diseases are prevalent in England and Wales. The counties most heavily affected are: Glamorgan 358 (Swansea 142, Rhondda 94, Caerphilly 84); Warwick 168 (Birmingham 7, Leamington 42, and the districts of Southam 39, Tamworth 35, and Shipton-on-Stour 20); Cumberland 155 (Workington M.B. 97, Ennerdale R.D. 21); Yorks (West Riding) 153 (Baildon U.D. 35, Thorne R.D. 64); Lancaster 146 (Blackpool 35, Blackburn 11, Manchester 11, Liverpool 9, and widely scattered in both urban and rural districts); Durham 116 (fairly evenly distributed in the five county boroughs and urban and rural districts); Gloucester 117 (Gloucester 51, Cheltenham M.B. 39, Bristol 20). On the other hand, in London there were only 9 cases (Bermondsey 3, Battersea 2, Lewisham 2, Islington 1, Shoreditch 1), in Leicester 8 (none in Leicester City), in Notts 5, Berks 2, and none in the counties of Hertford, Hunts, Norfolk, Soke of Peterborough, Rutland, Suffolk East and West, Cardigan, and Radnor. It is seen that, generally speaking, the expected measles epidemic has not yet made its appearance in the big cities, but the presence of multiple foci all over the country is likely to result in rapid spread at an early date.

Whooping-cough occupies third place in order of prevalence; in contrast with measles it remains typically an endemic disease of large towns and urban communities, rarely acquiring the explosive epidemic character of measles; occasionally, however, an unexpected prevalence is encountered, especially in isolated communities of the closed or semi-closed sort. Large numbers were notified during the week in: Birmingham 43, London 28, Eastbourne 26, Blackburn 25, Swansea 25, Beaconsfield 15. In Liverpool and Manchester only 6 cases were notified in each, and in seven counties no notifications were recorded: Anglesey, Caernarvon, Merioneth, Montgomery, Radnor, Rutland, Soke of Peterborough.

League of Nations Epidemiological Report for 1937

The *Epidemiological Report* for 1937 deals mainly with the incidence and mortality of the acute infectious diseases in the principal countries of the world, and the corrected figures of the rates of births, general mortality, and infant mortality in thirty-five countries. A special table gives details of the death rate according to age and sex in recent years and the corresponding standardized general mortality rates. England and Wales compared favourably as regards typhoid fever (which is generally regarded as one of the most sensitive single indices of the health of the community) with most other European countries; the figure of 1,186 (specific mortality per 100,000 inhabitants, 0.5) is much smaller than that for the previous year but rather greater than in 1935. High figures were recorded in Italy 32,131 (11.8); Poland 17,490; Hungary 10,144 (10); Czecho-Slovakia 7,461 (6.3); Rumania 7,379 (8); Greece 6,266; and Germany 3,051 (0.8). Figures in parentheses are specific mortality rates per 100,000 inhabitants. The latest data from the U.S.S.R. are 61,334 cases in 1936, and from Spain 16,354 cases in 1935. In most countries the third quarter of the year has the worst typhoid fever record.

Diphtheria was comparatively common in England and Wales, although there were fewer cases than in Germany per head of population—64,341 (7.2) against 146,773 (10.9)—and mortality was much lower. The situation here compared unfavourably with other large countries—for example, Italy 28,596 (6.3), Poland 21,084, and France 19,187 (3.2). Scarlet fever was less prevalent in England and Wales 95,735 (0.8), Germany 117,544 (1.9), France 18,728 (0.7), and Italy 16,302 (0.7), but more prevalent in Poland 24,896 and in Scotland 20,493 (2.5). Both diphtheria and scarlet fever were most prevalent in the last quarter of the year in the majority of countries. Among European countries acute poliomyelitis was prevalent in Italy 2,740 (0.8), Germany 2,723 (0.5), Sweden 1,931 (6.8), Switzerland 1,494 (4.2), and Denmark 1,243 (3.6), compared with England and Wales 864 (0.3), France 592, and Poland 158. In the United States of America there were 9,511 (1.1) cases in 1937, in Canada 3,880 (1.8), and in Australia 1,979 (1.7).

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INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended December 2, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	27	2	12	1	—	16	1	7	—	—
Deaths		—	2				—	—		
Diphtheria	1,010	45	241	55	47	1,545	156	248	72	19
Deaths	19	—	3	1	3	28	4	8	2	1
Dysentery	50	2	41		—	64	15	21		1
Deaths			1	—	—			—	—	—
Encephalitis lethargica, acute	1	—	1	—	—	6	—	—	—	—
Deaths		—	—				—	1		
Enteric (typhoid and paratyphoid) fever ..	13	1	2	12	—	29	8	2	7	4
Deaths	1	—	—	—	—	—	—	—	—	—
Erysipelas			52	9	7			81	3	7
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years ..										
Deaths	36	4	8	9	4	41	13	11	5	3
Measles	2,206	9	19		38		24	34		7
Deaths	—	—	—	—	2	1	—	—	1	—
Ophthalmia neonatorum	75	1	15		2	72	8	21		—
Deaths										
Pneumonia, influenzal*	461	31	5	—	22	681	97	18	6	13
Deaths (from influenza)	23	3	4	—	—	24	1	3	6	2
Pneumonia, primary			139	11				373	11	
Deaths		5		4	6		1		14	11
Polio-encephalitis, acute	1	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	17	4	2	—	—	37	9	2	2	—
Deaths		—	1				—	—		
Puerperal fever	1	1	10	2	—	11	11	10	3	1
Deaths		—					2†			
Puerperal pyrexia	156	7	12		4	130	15	11		1
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,355	31	158	65	87	1,909	158	359	64	91
Deaths	1	—	1	—	—	2	—	—	1	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,244	28	20		—		190	325		10
Deaths	5	2	2	1	1	16	4	7	1	—
Deaths (0-1 year)	311	45	61	36	17	348	66	74	39	20
Infant mortality rate (per 1,000 live births) ..						58	54			
Deaths (excluding stillbirths)	4,673	718	581	172	135	4,574	878	691	192	147
Annual death rate (per 1,000 persons living) ..			11.8	11.6	11.9	11.2	11.2	14.1	13.0	13.0
Live births	4,923	637	797	335	182	6,073	1,146	880	290	202
Annual rate per 1,000 persons living			16.1	22.5	16.0	14.9	14.6	17.9	19.6	17.9
Stillbirths	257	28	40			245	32			
Rate per 1,000 total births (including stillborn)			48			39	27			

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Deaths from puerperal sepsis.

Letters, Notes, and Answers

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QUERIES AND ANSWERS

Achlorhydria and Condiments

Dr. L. I. Hardy writes: Can any of your readers inform me whether the practice of taking condiments at meal times is more prevalent among the natural achlorhydrics than among the rest of the population, and whether this can be carried on by them with impunity for many years?

Crataegus oxyacantha

Dr. Frank Bodman (Bristol) writes: Mr. A. E. Sawday (December 9, p. 1172), in effect, asks when should a dose be defined as homoeopathic. It might appear that there was some arbitrary level of dilution below which all doses could be called homoeopathic. In actual practice this is not so. In some subjects the pupil dilates to extreme dilutions of atropine, but this is still a physiological effect and not a homoeopathic action. Crataegus given in 45-minim doses a day produces in hyperpietics a fall in blood pressure. This may be described as a physiological effect. Crataegus given in 1 to 5 minim doses to patients suffering from reduced pulse pressure raises the pulse pressure. This is its homoeopathic action. In the case of crataegus the margin between the physiological range and the homoeopathic range of action probably is very small. In the majority of drugs the gap between the two actions is much larger.

Income Tax

Married Woman—Employment of Domestic Staff

"E. A." is a married woman holding a public health appointment. Owing partly to the illness of her husband she has to employ a housekeeper and a children's nurse to set herself free for her professional duties. Can she claim any deduction for these expenses?

⁂ No. It was ruled in the case of Bowers *v.* Harding (concerning a schoolmistress who employed a domestic servant) that such expenses were not incurred in the performance of the duties of the office, and therefore could not be deducted.

Property in Scotland

"A. B." used to occupy some premises, part of which were sublet. He has now left, and the whole of the premises is let in sections. The premises have been revalued by the rating authorities on the basis of the rents payable less rates borne by "A. B.," and the result is a substantial increase. The points mentioned below arise.

⁂ While "A. B." was actually in occupation of a part of the premises their annual value was to that extent a matter of estimate. It is not uncommon for an increase to occur when the estimate is displaced by an actual letting. The division of the rating into two sections is permissible, and lends itself to the allowance in due course for empty periods; it may therefore be accepted. If the rents are collected at frequent intervals some deduction from the full amount for the year is usually made. The fact that certain fixtures and fittings are included in the rents should be explained and a deduction claimed—33⅓ per cent. of the capital value would probably be the maximum allowance. With regard to the income tax, Schedule A, if the tax paid by way of deduction from "A. B.'s" trust income is likely to cover his whole liability, the inspector of taxes will no doubt arrange on request for the Schedule A tax to remain in abeyance until the end of the financial year—or if not the whole at least a substantial part of it.

Superannuation—Payment of Premium by Employer

"D.P.H." holds an appointment in a sanatorium, but not under a local authority. The governing body have arranged that "D.P.H." shall take two units in the B.M.A. Pension Scheme, and that they will pay for one of the two units so long as he is in their employment. The income tax authorities claim to regard that payment as assessable income in "D.P.H.'s" hands.

⁂ That view appears to be legally correct on the basis that "D.P.H." is liable to pay for both units, and that payment on his account by the employer is equivalent to payment by him. The corollary to acceptance of that proposition, however, is that "D.P.H." is entitled to the life assurance relief on *both* units—and we gather that the authorities are prepared to accept a claim on that basis. (The compulsory levy in the case of local authority employees rests on an entirely different legal basis, and the deductions made are dealt with as if they were expenses of the employment.)

LETTERS, NOTES, ETC.

Hypersomnia after Accident

Mr. Norman Porritt, M.R.C.S., L.R.C.P. (consulting surgeon, Huddersfield Royal Infirmary), writes: The following account of excessive sleepiness after an accident, and of its treatment by benzedrine, was thought worth recording. The patient is a healthy-looking, well-nourished man, 81½ years old, who does not look his age. For as long as he can remember he has had a sleep after his midday meal. On December 22, 1938, he fell backwards down a short flight of stairs and struck his head violently against the wall at the bottom of the stairs. At the beginning of 1939 he began to be unaccountably sleepy, until at length he was overcome by sleep after breakfast and slept till lunch time. Though he had his afternoon sleep he found it difficult in the evening to keep awake till bed time, when he slept all the night. His urine had a specific gravity around 1020 and was free from sugar and albumin. One estimation of his blood urea showed it to be within normal limits. He is not a big eater, especially of meat. His bowels move daily without aperients. When awake he is mentally bright and active. As no flaw was found in his health to explain the condition his somnolence was diagnosed as narcolepsy due to old age and the fall he had. On August 2 he was given half a milligramme of benzedrine three times a day; on August 4 he was just as sleepy, and the dose was increased to one milligramme three times a day. By August 14 there was no sleepiness till bed time. He had a better appetite and was brighter. Since August 17 sleepiness has been less marked and less trying. Half or one milligramme of benzedrine on odd days dissipated it. by November 23 the sleepiness had vanished, the patient having taken no benzedrine since September 15. When he took 1 mg. three times a day for three days he said he felt "doped," his walking powers were weakened and his brain befogged.

Supplementary Food Rations for Invalids

Dr. M. Fishman (London, N.W.2) writes: The following communication has been received from the local Food Control Committee: "For the present no arrangements are being made to provide for special or supplementary rations for invalids owing to the limited number of commodities which are being rationed and the adequacy of supplies of alternative foodstuffs." This ruling, unless modified, will cause unnecessary hardship among invalids. I believe in the last war arrangements were made for invalids to receive supplementary rations on medical certification.

Disclaimer

Dr. H. Gordon McGregor (Hove) writes: May I request the hospitality of your columns in order to disclaim any responsibility for an article which appeared in an evening newspaper for December 7 under my name? My original article was published by the *Practitioner* last month, and reappeared, to my astonishment, in the evening press with full case notes. I understand that there is no power of preventing a free press from "lifting" articles in this regrettable manner, or likelihood of obtaining even the common courtesy of a formal request before they do so.

BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 30 1939

THE PAINFUL SHOULDER*

BY

PHILIP D. WILSON, M.D.

New York City

(WITH SPECIAL PLATE)

Shoulder pain may be due to a host of causes, and in order to transfer the discussion of this subject from an abstract to a specific basis I submit the following analysis of diagnoses from 168 personally studied cases seen during the last five years. This list is presented with due apology for its shortcomings and with the full knowledge that it represents nothing more than the experience of an individual surgeon. Its only merit lies in the fact that it includes all patients seen during this period who complained primarily of the shoulder, and that it gives an indication of the variety of conditions that must be included in the differential diagnosis.

TABLE I.—*Showing Analysis of Diagnoses of 168 Personally Studied Cases of Shoulder Pain*

	No. of Individual Lesions	Totals for Different Groups
I. Region of shoulder:		
(A) Lesions of subacromial bursa	.	.. 89
1. Calcifying tendinitis	25	
2. Periarticular adhesions	36	
3. Rupture of supraspinatus or associated tendons	11	
4. Undifferentiated non-traumatic lesions	7	
5. Traumatic lesions of uncertain nature	10	
(B) Lesions of biceps tendon	.	.. 5
1. Rupture, long head	2	
2. Probable dislocation of bicipital tendon	3	
(C) Lesions of bones	.	.. 16
1. Lesions of upper part of humerus:		
(*a*) Osteomyelitis	1	
(*b*) Tumour (fibrocystic disease)	1	
(*c*) Fracture of surgical neck ..	10	
2. Lesions of clavicle:		
(*a*) Fracture	1	
(*b*) Pseudarthrosis	2	
3. Lesions of acromion:		
(*a*) Congenital deformity	1	
(D) Lesions of shoulder-joint	.	.. 27
(*a*) Dislocation (acute)	4	
(*b*) Fracture-dislocation (old) ..	5	
(*c*) Recurrent dislocation ..	8	
(*d*) Congenital posterior subluxation	1	
(*e*) Tuberculous arthritis	3	
(*f*) Rheumatoid arthritis	5	
(*g*) Old suppurative arthritis ..	1	
(E) Lesions of acromio-clavicular joint ..	.	.. 10
1. Subluxation	4	
2. Dislocation	3	
3. Osteo-arthritis	2	
4. Probable infectious process ..	1	
(F) Myositis ossificans, pectoral muscles	1	
(G) Thrombosis, axillary veins	1	
II. Region of scapula:		
(A) Exostosis	1	
(B) Infrascapular bursitis or myositis	1	
III. Region of cervical spine:		
(A) Osteo-arthritis	2	
(B) Metastatic carcinoma	2	
(C) Congenital abnormality of transverse process: first dorsal	2	
(D) Cervical rib	1	
(E) Scalenus syndrome	2	
IV. Neurological lesions:		
(A) Brachial plexus injury	2	
(B) Spinal accessory paralysis	2	
(C) Anterior serratus paralysis	1	
V. Thoracic lesions:		
(A) Pneumothorax (pulmonary tuberculosis)	1	
(B) Pulmonary neoplasm	1	
(C) Coronary thrombosis	1	

Study of this table shows that lesions of the subacromial bursa accounted for eighty-nine, or 53 per cent., of the 168 cases. The other pathological lesions occurred in a scattered manner, with the exception of the fractures and dislocations, which were included only for the sake of completeness. In the space at my disposal I cannot attempt to consider all the various causes of shoulder pain; consequently attention will be devoted only to the more common ones.

Lesions involving Subacromial Bursa

Some objection may be made to the differentiation of lesions causing shoulder pain on the basis of whether or not they involve the subacromial bursa, and it may be claimed that a better classification could be obtained upon a pathological basis. The exact nature of several of the pathological processes is, however, obscure, and it seems to me that they can be best understood in relation to the anatomy and function of the subacromial bursa.

This bursa serves to remove friction and to permit the greater tuberosity of the humerus to rotate inwards under the acromion process in movements of abduction and rotation of the shoulder. It is a synovial sac about one and a half inches in diameter whose base is fixed to the superior capsule of the shoulder-joint and to the greater tuberosity of the humerus, and its roof to the proximal portion of the deltoid muscle, the coraco-acromial ligament, and the acromion process. The peripheral portions of the bursa are loose and redundant, and thus permit the floor of the bursa to glide under the roof during the different movements of the shoulder. Normally the layers of the bursa are approximated, but enough fluid is secreted to keep them moist and lubricated. When the two layers become adherent movement of the shoulder is greatly restricted (Fig. A).

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* Read in opening a discussion in the Section of Orthopaedics and Fractures at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

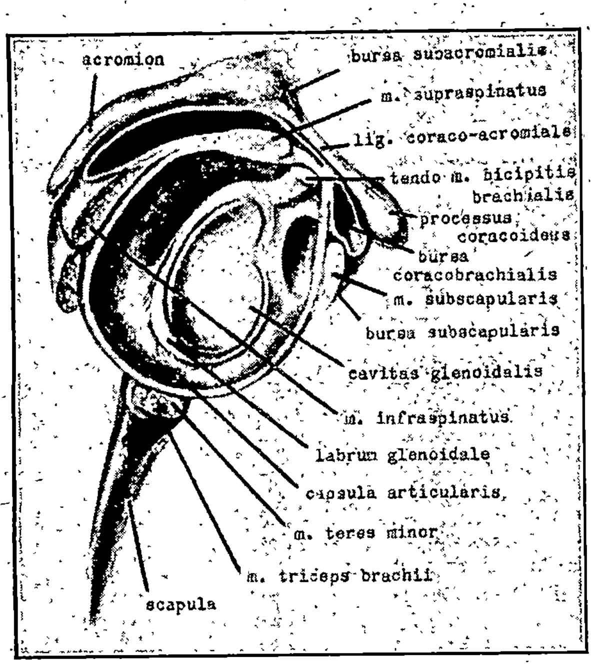

Fig. A.—Specimen showing relations of subacromial bursa, capsulo-tendinous cuff, and shoulder-joint after removal of humerus.

Inflammation of the subacromial bursa occurs practically always as a consequence of a lesion involving neighbouring structures. Codman (1934) states: "I now feel that an attempt to describe bursitis as an entity would be equivalent to attempting to describe peritonitis as an entity. It is not a structure where disease starts, so much as a structure which limits disease in the adjacent structures by temporary adhesions causing fixation of the parts." Just as it would be a mistake to-day to make a diagnosis of generalized peritonitis without attempting to describe its cause, so it would be a mistake to make a diagnosis of subacromial bursitis without first defining its origin.

In the subacromial bursa the source of most of the pathological changes is the structure forming the larger part of its floor. This is variously designated as the superior capsule of the joint, the supraspinatus tendon, and the musculo-tendinous cuff. It is in reality a composite structure made up of the short flat tendons of the subscapularis, supraspinatus, infraspinatus, and teres minor muscles, which blend with the capsular ligament and with each other at a point about one inch proximal to their bony insertions to form a conjoined tendinous and capsular cuff whose fibres are indistinguishable from each other. Again I quote from Codman, who says: "I may summarize by saying that owing to the peculiar mechanics of the shoulder the avascular and inert supraspinatus tendon is the most vulnerable part of the joint, and that inflammation in it is apt to be painless until the adjacent subacromial bursa is involved, which, being abundantly supplied with vessels and nerves, produces the symptoms of which the patient complains." It should be pointed out, further, that, owing to the relatively unstable architectural arrangement of the shoulder-joint with its large humeral head and small glenoid cavity, this tendino-capsular cuff is called upon to bear a great deal of strain and is exposed to injury either from repeated minor insults in daily use or a single more serious trauma. Meyer (1931) pointed out the high frequency of attritional changes involving the tendino-capsular cuff and long tendon of the biceps found upon routine examination of many cadavers. It is probable that these changes play a large part in the genesis of many painful lesions of the shoulder.

The more common lesions involving the subacromial bursa are the following: (1) calcareous deposits (calcifying tendinitis); (2) periarticular adhesions (tendinitis); (3) rupture of supraspinatus tendon.

Calcareous Deposits (Calcifying Tendinitis)

There seems to be much confusion in respect to the part played by calcareous deposits in causing shoulder pain. This is doubtless due to the fact that calcification in the shoulder is not infrequently revealed by *x*-ray examination when the patient is completely free from any complaints in this region. Indeed, in the case of a patient complaining of a painful shoulder the *x*-ray examination of the normal side may show an even larger calcified mass than on the affected side. Again, there is an extreme variability in the severity of the symptoms which may be difficult to understand unless one has had the opportunity of exposing these lesions by operation and of observing at first hand the differences in the pathological appearance.

The deposits almost invariably originate in the tendino-capsular structure, and although they may be seen in the subscapularis, infraspinatus, or any other location, the favourite situation is in the supraspinatus tendon close to its point of insertion. Elmslie (1932) reported finding the calcareous material in a cavity in the greater tuberosity in three cases, but this is unusual. The characteristics of the deposits vary. Sometimes they may be found as uncoalesced collections of dry, gritty, sand-like particles without any surrounding hyperaemia (Plate, Fig. 1), and at others as confluent cavities filled with soft greyish material having much the same consistency as toothpaste and surrounded by zones of intense inflammatory reaction (Plate, Fig. 2). On some occasions in order to remove them it is necessary to excise the entire diseased portion of the tissue, on others only to prick the roof of the cavity and drain it like an abscess. Chemical analysis of the material has been made and the results reported by many observers, including Moschcowitz (1915), Codman (1934), and Elmslie (1932). The examination of material removed from several of my own cases agreed substantially with theirs. It is composed chiefly of calcium phosphate and calcium carbonate in non-crystalline form. In a case recorded by Codman calcium oxalate was present, but this substance was not reported by others. On microscopical examination the material is seen to consist of small ovoid colourless bodies of variable size, exhibiting a marked Brownian movement. It is insoluble in alcohol and ether. The murexide test for uric acid is negative. The Liebermann-Burchard test for cholesterol is sometimes positive and sometimes negative.

All cultures made from these deposits, including both those reported by others and those in my own cases, have proved negative. There is no scientific evidence, therefore, to support the contention that the deposits are of infectious origin. Similar deposits have occasionally been found in other regions of the body, particularly in and about the tendinous attachments of the gluteus medius and minimus muscles, the flexors carpi ulnaris and radialis, muscles, and the tendo Achillis. Worthy of note is the observation that all of these structures have the common characteristic of being dense fibrous tissues with slight, if any, vascularity.

Method of Deposit Formation

Microscopical examination of different specimens shows that the deposit is first laid down in small punctate areas deep in the tendinous fibres. Gradually these enlarge, coalesce, and work their way to the surface of the tendon. Milgram (1939) recently called attention to the occurrence of large round cells in the tendon whose cytoplasm gradually became swollen and lost its staining properties. This change seemed to be followed by precipitation of calcium—at first in the periphery of the cell, but gradually spreading until the entire cell became calcified. Whether these were cells of the wandering type or connective-tissue cells that had undergone pathological change had not yet been determined. Reasoning from what is known of calcifying processes in other structures, and particularly in the walls of blood vessels, the most tenable theory would seem to be to regard these deposits as the result of degenerative changes in dense avascular fibrous tissue not unlike that seen in arteriosclerosis. Attrition rather than injury would seem to play the principal part, but the process can probably be best described as a calcifying tendinitis.

Symptoms of Calcifying Tendinitis

Whether or not the deposit gives rise to painful symptoms would seem to depend upon its having enlarged sufficiently to approach the tissue layer beneath the bursal wall, which, being richly supplied with vessels and nerves, is capable of reacting in the usual inflammatory manner and of transmitting painful stimuli. Inflammatory reaction may result in absorption of the deposit, or in certain instances the material may actually rupture into the bursal cavity, where it sets up an intense but usually short-lived inflammation, finally resulting in absorption. When the deposit lies deep in the tendinous structure it causes no symptoms. As it enlarges the overlying tissues become thinned and it causes a localized hyperaemia or swelling. At this stage the patient will begin to complain of a painful catch in the shoulder on certain movements, usually those of abduction and external rotation, in which the painful area is compressed between the greater tuberosity and the acromion process. Other motions are free and painless. *X*-ray examination will usually reveal a small rather discrete calcareous deposit, lying as a rule in the region of the supraspinatus tendon close to the greater tuberosity, but it is to be emphasized that there is more variation in the anatomic location than generally supposed. This is the subacute stage, and it may persist for many months with slight, if any, change.

Other patients with or without previous shoulder symptoms of the subacute type may be awakened in the middle of the night with acute pain, which very quickly becomes excruciating. Such patients show extreme apprehension of the slightest movement of the shoulder and are unable to co-operate upon examination. It may appear hot and slightly swollen, and is exquisitely tender upon palpation. There may be a slight elevation of temperature and a moderate leucocytosis. The *x*-ray examination at this time will often reveal a mass of calcareous matter filling the bursal cavity and sometimes extending downwards over the greater tuberosity. Large doses of morphine may be necessary in order to give relief. This is the acute stage.

I have had the opportunity of observing the actual pathological condition in several of these acute shoulders at operation. In two cases there had occurred a rupture of the calcareous matter into the bursal cavity. The bursal wall was congested, and upon opening the sac it was found to be filled with fluid containing white calcareous substance and fibrin. After removing this substance a small cavity could be seen in the floor of the bursa from which it had escaped. In other cases the bursal wall was found reddened and adherent over the deposit, and upon puncturing these tissues the calcareous matter spurted out in a liquefied state with much the same appearance as pus escaping from an abscess cavity.

Treatment of Calcifying Tendinitis

Formerly the only alternatives in the treatment of calcifying tendinitis were rest and physical therapy or surgical excision. Of the various physical agencies that have been tried the most benefit has been obtained from properly administered diathermy. I have seen demonstrated many cases in which complete relief of symptoms and disappearance of the deposits upon *x*-ray examination had followed promptly after a series of such treatments (Titus, 1929). In contrast, I have seen similar cases in which no improvement was obtained by this method. I have also observed patients in whom the symptoms were relieved and the deposits disappeared without any treatment other than rest. I am therefore unable as yet to accept the claims of benefit from diathermy as fully proved.

The results of surgical excision of the deposits are definite, and the relief conferred upon patients with the acute type of symptoms is so immediate and great that there is much to recommend it. On the other hand, with the subacute type of symptoms few patients are sufficiently disabled to be willing to undergo even this mild procedure. Particularly is this so in the case of women, to whom the thought of a disfiguring scar is objectionable.

Fortunately we now have the method of aspiration and irrigation by needle to accomplish the same result as by operation, only with less trauma (Plate, Figs. 3 and 4). Porritt (1931) was one of the first to indicate the usefulness of this method, but Patterson and Darrach (1937) published the most comprehensive series of cases. They used two needles, one inserted from the anterior aspect and the other from the lateral aspect directly into the deposit. Salt solution was forced in by syringe through one needle and allowed to escape through the other. They made no claims for complete removal of the deposits by this method, although that result was achieved in a few instances. They did state, however, that pain was relieved and function restored, either immediately or within a few days, and that absorption of the calcareous matter followed within a period of a few weeks (Table II).

TABLE II.—*Showing a Summary of Cases treated by Irrigation (By courtesy of Dr. R. L. Patterson)*

Treated by irrigation		63
Acute (seven days or under)	48	
Subacute (under one month)	8	
Chronic (over one month)	7	
Histories of previous attacks		17
Roentgenograms showed calcium shadows		48
Average period of economic disability:		
Acute	4.8 days	
Subacute	7.0 „	
Chronic (when relieved)	10.14 „	
Results:		
Complete relief of symptoms		57
Infections		0
Limited motion in shoulder		2
Operation necessary after irrigation		2
Pain and limited motion still present		2

NOTE.—Only one of the six cases included in the last three groups was acute.

I have had the opportunity of observing the results obtained by Patterson in many cases treated by this method at the Hospital for the Ruptured and Crippled, and am in a position fully to confirm his earlier conclusions. I have also employed this method of treatment in some of my own cases. In the acute cases the relief that may be obtained is striking, and it is a cause for gratification that we now have at our command a method that is capable of affording immediate, and generally permanent, relief from such severe pain. Failures result in a few cases when one has been unsuccessful in reaching the calcareous deposits with the needle, but the procedure should then be repeated, employing *x*-ray localization in order to guide the needles. Recently Milgram (1939) stated that it was unnecessary to employ saline irrigation, and that he had obtained just as good results by direct needling and aspiration. He believed that the essential factor was to puncture the deposit and open channels through which capillaries might penetrate, a process that would be followed by absorption.

Relief may also be obtained by puncture and irrigation in the subacute cases. All depends upon being able to reach the deposit, and greater skill comes with greater experience. Accurate localization of the deposit by preliminary *x*-ray examination in two planes is necessary. In a few cases deposits of dense, almost bone-like, consistency may be encountered which do not respond to this method of treatment. In such cases operative excision may still remain the procedure of choice.

Reviewing the twenty-five cases of calcifying tendinitis that occurred in the series, I find a preponderance of the male sex, which accounted for sixteen, or 64 per cent. In respect to age, the peak of the incidence was 46 to 50 years, with almost as many in the 41–45 year and 51–55 year periods (Fig. B). There was practically an even distribution between the left and right sides, with three bilateral cases. Nine cases were classified as acute and sixteen as subacute. Of the acute cases three were treated by operation, three by needling and irrigation, and the remainder by immobilization with sling and circular bandage and by local heat. All recovered within a period of seven to ten days, but those treated by puncture and irrigation made the most rapid and spectacular improvement. Of the sixteen subacute cases three were treated by puncture and irrigation with relief, two by diathermy, and the remainder expectantly, since their symptoms were minimal and did not cause disability. The final results in these cases are unknown.

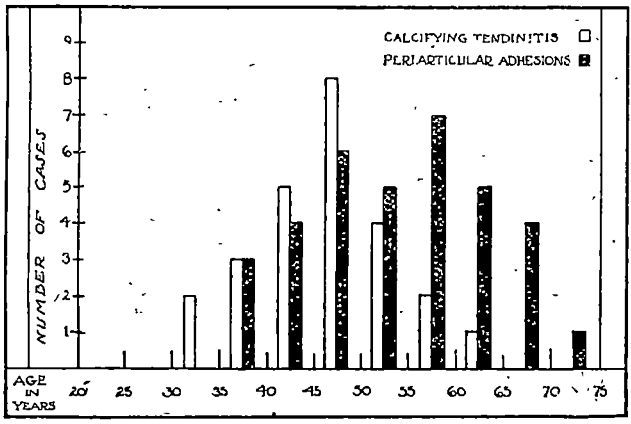

FIG. B.—Graph showing comparative age incidences of twenty-five cases of calcifying tendinitis and thirty-five periarticular adhesions. (One case of periarticular adhesion is not included, as the patient's age was not obtainable.)

Periarticular Adhesions (Tendinitis)

Periarticular adhesions account for even more cases of shoulder pain than do calcareous deposits. In my group of cases they numbered thirty-six, compared with twenty-five of the latter. The age incidence appeared to be a little older, as may be seen from a glance at the graph, although this observation is not confirmed by the figures given by Codman (1934). The males outnumbered the females twenty to sixteen. The left shoulder was affected twenty-one times, the right seventeen times, and in two cases the condition was bilateral.

Little is known of the exact pathological process, and the nature of the condition can only be deduced from the clinical evidence. The symptomatology is so characteristic, however, that there can be no doubt that we are dealing with a separate disease entity. The patient is not usually seen until the condition is already well established. He generally gives a history of having noticed a slight painful catch in the region of the shoulder and upper arm for a period of several months. Gradually he has become aware of an inability to perform certain tasks or to participate in certain sports because of stiffness in the arm. Night pain, often awakening him after he has fallen asleep, is a common complaint. Frequently it radiates down the arm to the hand, but without being localized to any nerve distribution.

Physical examination fails to reveal any swelling or definite point of local tenderness, although there may be generalized sensitiveness about the shoulder. Tests of movement, however, invariably show marked restriction of both active and passive abduction and of rotation. If the shoulder girdle be fixed in order to limit the motion to the scapulo-humeral joint the range of abduction may not exceed 35 to 45 degrees. When one forces the movement pain is elicited. The *x*-ray examination is usually quite negative, although in a few of my cases several flecks of calcium deposit were shown. In addition we know that when this condition is treated by forcible manipulation, as advocated by Sir Robert Jones and others, there occurs a loud sound of snapping adhesions, followed immediately by a complete freeing of the shoulder movements. From this and the negative *x*-ray findings the condition has been ascribed to the formation of adhesions about the joint. No evidence of arthritis has been found. Where these adhesions are located has never been definitely discovered. I have operated upon several patients with this condition and explored the subacromial bursa, with rather disappointing findings. In only one case was the bursa obliterated by adhesions. In two cases the appearance of the bursa was fairly normal, although it seemed small, and there may have been adhesions at the redundant free edges. In one other case the bursa appeared normal, but the tendino-capsular cuff lying beneath it was of a uniform red colour, indicating an extensive hyperaemia, and I am led to believe that this was an early case with the inflammatory process still present and active. Codman has reported similar findings. With my finger in the bursa I manipulated three of these shoulders and felt the snapping of adhesions in the capsular structure beneath my finger and anteriorly in the region of the subscapularis tendon.

I am of the opinion, therefore, that the adhesions lie in the substance of the tendino-capsular structure, whence they may extend, to involve either the underlying or the overlying tissues. The process probably starts as a tendinitis, which subsides, leaving a thickened inelastic capsule adherent beneath to the edges of the articular cartilage and above to the adjacent soft tissues. As to whether this tendinitis is a true inflammatory process due to low-grade infection as suggested by Dickson and Crosby (1932), or whether it is still another manifestation of the attritional and degenerative changes to which this structure is particularly liable I have no direct evidence. I can say, however, that most of the cases treated by me have recovered without any particular attention to foci of infection and that their recovery time compares favourably with that of the cases reported by Dickson and Crosby, in which all infectious foci were eradicated.

Treatment of Primary Tendinitis

In respect of treatment, it should be emphasized that by no means all of the cases of stiff or frozen shoulder are due to primary tendinitis. Many, according to the history, are clearly due to adhesive processes secondary to injury of the soft structures or to calcifying tendinitis. This differentiation is important, because the secondary cases respond well to local heat, massage, and active and passive movement, whereas in the primary cases this treatment is generally ineffective.

In discussing the subject of primary adhesive tendinitis Codman maintains that it is a self-limited disease and that all cases finally recover, with or without treatment. He is inclined to explain this to the patient and to leave the decision to him as to whether or not he will undertake treatment. While it is probably true that many of the patients will eventually recover without treatment, I do not share Codman's confidence that this will invariably be the case. Even if it were so, the length of time required would be too great in view of the amount of pain many of the patients suffer. My own procedure is to begin with physical therapy, consisting of local heat, massage, and pendulum exercises. If night pain is severe the arm is immobilized with a sling and circular body bandage when the patient is in bed. During the day active use with the arm at the side is encouraged, but motoring, lifting, and participation in sports are banned. If after a trial period of about two weeks no improvement of motion or diminution of pain has been noted some other procedure should be adopted. This usually means a choice between manipulation under anaesthesia or recumbent treatment with the arm suspended in abduction. Manipulation has given good results in my hands and has not resulted in complications, although I have seen cases of others in which the shoulder had been dislocated. During the manipulation the adhesions should be completely freed and massage and exercises should be started immediately. I do not favour the use of a splint, but I make it a rule to keep the patient recumbent in order that abduction exercises may be performed without the counter-effect of gravity.

Manipulation, however, is only too often followed by a difficult and painful period in which it is a question whether one will be able to maintain the newly acquired freedom of movement. I have been impressed by the fact that much of the original restriction of movement is due to irritation and muscle spasm, and that if this can be overcome the adhesions can be made to yield. To accomplish this result adhesive traction is applied to the upper arm with the elbow in right-angle flexion and the forearm suspended from an overhead frame, the patient being recumbent. The shoulder is generally maintained in a position of right-angle abduction, but several times a day the line of pull is changed so that positions of hyperabduction and of adduction may also be obtained. Not until the patient is able to maintain these extreme positions for considerable periods without pain—generally after seven to fourteen days—can the usual physiotherapy be started, and even then it is important at other periods to reattach the traction and suspension apparatus. Often at this stage the part-time use of an abduction splint can be substituted. Gradually the shoulder is allowed more and more freedom, and the frequency and amplitude of the exercises are increased until complete recovery is obtained.

Of my own thirty-six cases fourteen responded to physiotherapy alone, ten were treated by manipulation with nine recoveries, three were treated by traction and suspension with complete relief, and nine were untreated.

Summary

A series of 168 personally studied cases of shoulder pain is analysed.

Pathological processes are discussed in relation to the anatomy and function of the subacromial bursa.

The more common lesions involving the subacromial bursa—calcareous deposits (calcifying tendinitis), periarticular adhesions (tendinitis), and rupture of the supraspinatus tendon—are reviewed and their treatment described.

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Leaflet No. 11 in the series issued by the Department of Scientific and Industrial Research on methods for the detection of toxic gases in industry deals with aniline vapour (H.M. Stationery Office, 3d. net). Aniline exists in small quantities in coal tar, but is produced industrially almost exclusively by the reduction of nitrobenzene. It is chiefly used as a starting-point in the manufacture of dyestuffs and to a less extent in other chemical industries. Its pleasant smell in no way suggests the dangers resulting from its presence in the atmosphere. It has been shown that cases of acute aniline poisoning arise by absorption through the skin by splashes either directly on the skin or indirectly through the clothing. Its immediate toxic effect is on the blood, and the symptoms which characterize it are a blue-grey discoloration of the lips, ears, and cheeks. Depending on the intensity of the concentration, shortness of breath, rapid feeble pulse, nervous excitement not unlike drunkenness, may occur later. With a concentration of one part in 140,000 slight symptoms may occur after several hours' exposure, while with concentrations of one part in 10,000 to one part in 6,000 serious disturbance occurs if the atmosphere is inhaled for more than an hour.

TREATMENT OF HAEMORRHOIDS*

BY

W. B. GABRIEL, M.S., F.R.C.S.

Surgeon, Royal Northern and St. Mark's Hospitals

(WITH SPECIAL PLATE)

The choice of treatment of haemorrhoids depends so much on examination and an accurate estimation of the condition presented in each particular case that I should like to say a few words on these preliminaries.

Distinction between Internal and External Haemorrhoids

The distinction between internal and external haemorrhoids is of the first importance. Internal haemorrhoids arise from the columns of Morgagni as the result of dilatation and engorgement of the internal haemorrhoidal plexus, and are covered by mucous membrane which is at first of the normal bright pink colour. This colour may be changed by superficial inflammation, ulceration, or sloughing. Later, as the result of repeated prolapse and surface irritation, a large internal pile often shows an overgrowth of squamous epithelium over its lower pole. It may be noted that we see exactly the same change quite commonly over the mucous membrane of the appendix when exposed as an appendicostomy. An internal pile may thus become considerably covered by squamous epithelium, and therefore when prolapsed it somewhat resembles on superficial examination an external skin tag, but the groove which originally marked the muco-cutaneous junction, due to the attachment of the terminal fibrous expansion of the longitudinal muscle, persists in most cases and thus separates it quite clearly from an external pile.

As opposed to this an external pile is covered by skin *ab initio*, whether it is in the stage of an acute thrombosed external pile (anal haematoma) or a soft anal skin tag. Under certain conditions, however, an external pile must be carefully inspected to discover its true nature. Thus an acute haematoma may be seen at the stage when the skin has become ulcerated so that blood and clot are being discharged, and it has on cursory inspection a superficial resemblance to a prolapsed internal pile. Again, if a large mass of external thrombosis and oedema is present careful examination is often needed to detect the lower pole of a prolapsed and thrombosed internal pile in the same quadrant, which is really the "villain of the piece." The anal margins must be separated and perhaps some traction in a lateral direction applied to the haematoma, when the lower pole of the thrombosed internal pile, if present, will at once be seen.

Treatment of External Piles.—Excision of a solitary tense anal haematoma under local anaesthesia is the most common, and a very satisfactory, anal operation. A large conglomerate type of anal haematoma is best treated on expectant lines. Skin tags at the anal margin may subside with lead lotion compresses, but if large should be excised under local anaesthesia. When associated with prolapsing internal piles (intero-external type) a formal haemorrhoidectomy is the best treatment.

Degree of Internal Haemorrhoids

The treatment of internal haemorrhoids is intimately linked up with a correct assessment of the degree of prolapse. Ernest Miles (1919) divided piles into three stages.

Primary, being the earliest stage, in which bleeding takes place at defaecation: the pile may just become grasped by the anal sphincters during the act of defaecation, but no prolapse outside the anal margin occurs.

Intermediate, when the pile protrudes through the anal orifice at defaecation and then becomes reduced spontaneously when the expulsive effort has ceased. Some bleeding still occurs, but may be less than before owing to some fibrosis taking place in the substance of the pile, together with some thickening of the mucous membrane.

The final stage is reached when the prolapse is still more pronounced and does not become spontaneously reduced at the end of defaecation; the pile remains in the prolapsed and engorged state, and digital reduction is needed after each act of defaecation. Sometimes such a pile is irreducible by reason of mere bulk, massive thrombosis, or sphincter relaxation. Even after being properly reduced, recurrence of prolapse takes place subsequently on slight provocation, such as coughing, sneezing, any lifting effort, walking or standing for any length of time, or even passing flatus.

These three stages are now more commonly known as the first, second, and third degrees. It is essential to recognize the symptoms associated with piles of the third degree: mucoid discharge and bleeding into the clothing during the day are common complaints in addition to the necessity for digital replacement.

Routine Diagnostic Methods

Inspection, digital examination, and proctoscopy are required in all cases. The patient should be asked to strain down as the proctoscope is withdrawn in order that the full degree of prolapse may be seen, and very often a bleeding point is revealed as the piles become engorged.

The presence of fibrosis in an internal pile, so that it is palpable to a finger, is evidence of recent or old thrombosis. Large prolapsing piles can almost invariably be rolled under the examining finger, and if the process has advanced to the stage of formation of a fibrous polyp this can readily be felt and can usually be hooked down until it prolapses outside the anus. A pulsating branch of the superior haemorrhoidal artery can sometimes be felt in relation to one or more of the primary internal haemorrhoids, and is a clear indication of the need for a ligature operation.

Other associated ano-rectal conditions must be accurately diagnosed. Fissure in ano is one of the most important, and if present may have considerable influence on the choice of treatment. Of the many other conditions which may coexist with haemorrhoids it is necessary to mention the not infrequent association of carcinoma of the rectum: hence a high digital examination and sigmoidoscopy with this in mind should be done in all cases.

The choice of treatment is necessarily much influenced by finding a pelvic tumour of uterine or ovarian origin, and in men prostatic enlargement often introduces a difficulty in deciding on the right line of treatment. Abdominal conditions such as cirrhosis will affect treatment. In many cases I have seen a troublesome degree of piles in patients who were taking intensive alkali treatment for duodenal ulcer, and this combination is a difficult one to treat.; so also is any degree of haemorrhoids in patients with chronic cardiac or pulmonary disease. The general state of patients must always be carefully gone into, particularly if surgical treatment is proposed.

As a statement of the practice of St. Mark's Hospital I will now describe three treatments for internal haemorrhoids, each of which has a useful and in fact an essential place when applied to the right type of case.

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Palliative Treatment

Small internal piles associated with a generalized congestion of the lower rectum are not infrequently seen, particularly in stout subjects who may be liable to hepatic congestion and constipation. Medical treatment directed specially towards limiting the intake of meat and alcohol is of great value; the free drinking of water and barley-water will help constipation and enable aperients to be drastically cut down. I am anxious to stress the common tendency among the general public to take aperients unwisely and to excess: drugs such as salts, calomel, phenolphthalein, and some herbal teas undoubtedly produce irritating watery stools, and when these are voided there is a considerable amount of straining and rectal congestion. Women are very liable to these troubles, which often start during pregnancy.

Palliative treatment is necessary for an attack of prolapse with thrombosis. The more the local sepsis, with ulceration or sloughing, the greater the need for palliative treatment. I am strongly opposed to surgical treatment at this stage, and although this is a matter upon which some controversy exists I shall hope to convince you that surgery in the stage of septic thrombosed internal piles is unnecessary; it is apt to result in delayed healing and chronic post-operative ulceration, which may take months or years to clear up.

The most essential item in palliation is for the patient to be in bed: the foot of the bed may be raised upon blocks, or the buttocks be slightly elevated on a pillow. An attempt should be made to reduce the prolapsed pile or piles, and in most cases this can be done with gentle but firm pressure with the forefinger, aided by some dry gauze or cotton-wool. A firm pad of gauze moistened in lead lotion is applied and kept in position by a T-bandage. If the piles cannot be reduced, as sometimes happens when there is a massive degree of thrombosis with much external oedema, the anus is shaved, the patient confined to bed, and compresses of 1 in 2,000 perchloride, eusol, lead lotion, or dettol lotion are applied every three or four hours. This treatment can be carried out effectively in the patient's home; and in the hospital class I have been struck by the excellent results obtained provided the patient realizes the importance of staying in bed. On these lines the thrombosis quickly resolves, ulceration heals, and external oedema disappears; in fact, after a week's efficiently applied palliative treatment the majority of patients are able to begin getting up and about again. Only in the worst cases, with smelly sloughing piles, is longer treatment up to two or three weeks required in bed. A perianal abscess forms occasionally, and for such surgical drainage must be given.

When thrombosis has resolved, digital and proctoscopic examination will show if further treatment is required. In many cases nothing further has to be done. For some, injections are advisable, and in a few it is clear that large prolapsing piles remain and a ligature operation is necessary for cure: in no case should this be done within six weeks after an attack of prolapse and thrombosis.

Injection Treatment

The objects of injection-treatment are twofold: (1) to produce a chemical thrombosis in the internal haemorrhoidal plexus, and, following this, (2) a sclerosis in the submucous layer which will fix loose, redundant mucous membrane to the inner muscle layer and by fibrosis draw up the pile so that it no longer prolapses or becomes grasped by the sphincters.

The solution which is used at all the out-patient clinics at St. Mark's Hospital is 5 per cent. phenol in almond oil, with 2 grains of menthol to 1 oz. (Albright's solution). This is injected into the submucous layer by a technique which is now so well known as not to need detailed description. The following points might be mentioned.

SELECTION OF CASES

The ideal cases for injection are first-degree piles: a single small vascular pile can almost invariably be cured by a single injection. Second-degree piles are less favourable, for although bleeding can usually be stopped and prolapse improved so that the patient becomes symptom-free, recurrence after a variable time is not infrequent. Third-degree piles, particularly those which show an overgrowth of squamous epithelium at the lower pole and those with a marked external skin tag in relation (intero-external piles), are not suitable for injection, and as a general rule a ligature operation should be performed in these cases. Associated conditions such as anal fissure, a fibrous polyp, proctitis, or any inflammatory condition such as abscess or fistula are contraindications to injection treatment.

AGE AND OCCUPATION

Patients are commonly seen with piles of the second degree verging upon the third degree, and the choice of treatment may reasonably be influenced by age and occupation. In subjects under 30 years of age it is impossible to guarantee permanent cure by any method, including operation, and for this reason injection treatment is the method of choice in young subjects, with the object of postponing the need for operation until middle age. Late second-degree piles have a better chance of responding well to injections when the patient is engaged in some professional or sedentary occupation. Men doing hard manual work are often better treated by operation with a view to permanent cure rather than be subjected to disturbance of their work by repeated attendances for injections, which in the end may prove disappointing.

TECHNIQUE

It is essential to use a sufficiently long proctoscope and inject the phenol in oil into the submucous layer at the upper pole of the internal haemorrhoids. No pain should be caused by the injection, and if a patient complains of pain during or soon after injection it is certain that either the puncture has been too low down or a complicating fissure is present. There is no set routine for distributing the injections, but the constant arrangement of the three primary piles (left lateral, right anterior, right posterior) must be recognized. If one internal pile is more prominent than the others, particularly the right anterior, I find it is best to inject this alone at the first session and deal with the remainder at subsequent sessions. If one pile is seen to be bleeding, this should be chosen for the first injection.

The amount injected is usually 2 or 3 c.cm., and sufficient should be used to produce a smooth rounded swelling in the submucous layer, slightly pale but not white. In the case of a pile with a good deal of mucosal laxity it is often advisable to inject rather more, say 3 c.cm. into the upper end, and a further 2 c.cm. through another puncture slightly lower down.

When a pile is particularly vascular and bleeds freely from its lower pole, an injection of a stronger solution of phenol is valuable: for instance, 6 to 8 minims of 20 per cent. phenol in glycerin and water can be injected into the substance of the pile, using Graeme Anderson's syringe, either at the same time as the submucous injection high up (double-injection method) or at a later session. Subsequent injections are given at weekly intervals, and when a firm submucous induration has been produced in the three primary internal haemorrhoidal areas (as judged by digital examination and by direct touch with a probe through a proctoscope) the treatments should be discontinued. Re-examination is reasonably made after an interval of four to eight weeks, and then if the condition remains satisfactory the patient may be discharged. He should be advised to report at any time in the future if a recurrence of bleeding or prolapse should be noted.

RESULTS

The results of injection treatment, when done efficiently with proper doses at the correct level, depend upon the stage reached by the haemorrhoids at the beginning of treatment. For first-degree piles there is a high percentage of cures; in the second degree the results are less favourable, there being fairly commonly a recurrence of prolapse within three to five years; in the third degree there is at the best some amelioration in prolapse for perhaps three to twelve months, but any sort of permanent cure is unlikely to be achieved. A *single* third-degree pile, particularly when situated in the right anterior quadrant, sometimes does remarkably well, and by a series of repeat injections every year or so I have been able to keep many such patients very comfortable over a course of years.

Statistics in regard to the proportion of cures in the three degrees of haemorrhoids are very difficult to arrive at, and I believe my colleague, Mr. E. T. C. Milligan, has some interesting figures to present in this connexion. To mention some mass statistics, Kilbourne (1934) reviewed more than 25,000 collected cases, and estimated that recurrence took place in at least 15 per cent. within three years: it is not unfair to assume that this 15 per cent. was probably constituted by third-degree piles which were tentatively treated by injection.

To conclude this section I should like to summarize these few important points:

1. Cases for injection must be carefully selected, chiefly with the object of excluding third-degree piles.
2. Cases must be uncomplicated by other ano-rectal conditions.
3. The technique of injection is not easy, and much care must be taken to give adequate doses of the phenol-in-oil solution at the correct level—that is, at the upper pole of the pile and slightly above the level of the ano-rectal ring.
4. Complications are due to errors in technique; pain is due to the injection being placed too low down; chemical necrosis is due to a too superficial injection, overdosage, or injection into sclerosed tissue. Abscess formation is extremely rare, and is due to a combination of the above faults.

Operative Treatment

Operative treatment is the method of choice for the permanent cure of internal piles of the third degree, particularly those of the intero-external variety—that is, a prolapsing pile with a related skin tag in the same quadrant. Operation is indicated also when piles are complicated by a fibrous polyp, a fissure, a fistula, or any other rectal lesion which also requires surgical treatment for cure.

CHOICE OF ANAESTHETIC

In my opinion the ideal anaesthetic is a local infiltration of the external sphincter with 1 per cent. procaine by Hirschman's technique, supplemented by a subcutaneous injection of the solution at the anal margin in relation to the three primary piles. This form of anaesthesia gives perfect relaxation and is very rarely followed by any urinary difficulty; for instance, I have operated on a man aged 86 and a woman of 87 by this method; neither patient had to be catheterized after operation and both made a perfect recovery.

The next best form of anaesthesia is a low spinal injection, which also gives a perfect anaesthesia for the operation, but is followed in 5 to 10 per cent. of cases by a troublesome headache, and retention of urine is more common. General anaesthesia is seldom used, and its avoidance has contributed largely to post-operative comfort, for straining and vomiting have been practically eliminated by the use of local or spinal anaesthesia.

CHOICE OF OPERATION

It would appear that the operation for cure of haemorrhoids has now become more standardized, and I submit that Whitehead's operation, the clamp and cautery method, excision and suture over a clamp, and many others should all be relegated to the past. Even Salmon's ligature operation, which was practised by Salmon, Allingham, and their successors at St. Mark's Hospital for nearly a century, has now been superseded.

In 1919 Ernest Miles described his standard method of haemorrhoidectomy: a V-shaped flap of skin at the anal margin was raised at the base of each primary pile, the base of the V being at the muco-cutaneous junction, and a stout silk ligature was tied round the internal pile and the tissue thus dissected up. The anatomical difference between this operation and Salmon's operation—in which, it may be recalled, the scissor cut is made at the muco-cutaneous junction—remained unexplained until Milligan and Morgan's (1934) classical paper on the "Surgical Anatomy of the Anal Canal," which shows clearly that when this wide incision is made the longitudinal muscle is included in the ligature. This has now formed the most important feature of their later paper (Milligan, Morgan, Jones, and Officer, 1937), and a precise and ideal operative technique is now available. I speak with much enthusiasm regarding this operation, which enables the three primary piles to be removed completely; the ligatures are tied round the pedicles of the piles and are fixed by the inclusion of the longitudinal muscle, so that they cannot slip upwards and expose raw surfaces in the anal canal. The best ligature material is a matter of opinion: I prefer No. 3 chromic catgut on a round-bodied needle, tied by transfixion, with the knot on the lumen. The related portions of the external venous plexus are removed, together with the overlying skin, and post-operative tags are noticeably absent after this operation. Other benefits conferred by this operation are quicker healing, greatly reduced and almost absent risk of post-operative stricture, and total abolition of secondary haemorrhage, due, I presume, to the better fixation of the ligatures.

RESULTS OF OPERATION

When the operation is correctly performed for prolapsing haemorrhoids in a patient of middle age or over a permanent cure can be confidently promised in all cases. If the operation has to be done for young subjects under 30 the outlook is not so consistently good; I agree with Miles that some reserve must be exercised in promising cure in these cases, seeing that the primary piles may not all be fully developed at the time of operation. Apart from this, recurrences after operation are only rarely seen, and are due to faulty technique—that is, inadequate exposure of the piles and ligation of their lower extremities only, or omission to secure all three primary piles.

Conclusion

I should like to take this opportunity of stressing the safety of a haemorrhoid operation when done under modern conditions and the certainty of cure of a distressing and disabling complaint. The common notion among the public that haemorrhoidectomy is a very painful operation is one that should be strenuously opposed. The modern operation under local anaesthesia, with a carefully considered and well-tried after-treatment, is far from being a serious ordeal: the patient is able to walk to a bath on the third post-operative day, and the anal wounds are usually almost healed in two weeks after operation.

Summary

Essential points in the preliminary examination of a case of haemorrhoids are detailed: how to recognize the difference between internal and external haemorrhoids, the three degrees of internal haemorrhoids, and other associated anal conditions.

The treatment of external piles is described.

The three main lines of treatment for internal piles in routine use at St. Mark's are given: palliative, injection, and operative.

The safety of a haemorrhoid operation done under modern conditions, and the certainty of cure, are stressed.

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ELECTRICALLY INDUCED CONVULSIONS IN TREATMENT OF MENTAL DISORDERS *

BY

Wm. H. SHEPLEY, M.B., Ch.B., D.P.M.
Senior Assistant Medical Officer, Warlingham Park Hospital

AND

J. S. McGREGOR, M.B., Ch.B.
Assistant Medical Officer, Warlingham Park Hospital

(WITH SPECIAL PLATE)

It has long been observed that any severe shock, traumatic, pathological, or psychological, may occasionally lead to dramatic improvement in certain cases of mental disorder. Within the field of psychiatry the term "shock therapy" may be taken to mean the purposive induction of a sudden and disturbing physical or mental impact with specific remedial intent, to alleviate a disordered state of mind. To-day the term is used with narrower connotation, and denotes the induction of a state of coma by the administration of insulin (Sakel) or the production of epileptiform convulsions by such drugs as cardiazol, triazol, or picrotoxin. Dr. Lazlo von Meduna, in 1934 at Budapest, was the first to practise convulsion therapy, by using a solution of camphor in oil administered intramuscularly. This was soon superseded by the intravenous injection of an aqueous solution of cardiazol, giving more certain and controlled action (von Meduna, 1934). Meduna adopted the latter method of treatment because it had been observed that when epilepsy supervened in some cases of schizophrenia the schizophrenic symptoms cleared up (Muller, 1930). This has since been recorded by other workers (Shepley, 1938). Von Meduna (1937) suggested hypothetically that a biological antagonism exists between schizophrenia and epilepsy, and although the validity of this hypothesis is still disputed it is agreed by most workers that, despite certain disadvantages, the treatment is justified by results.

A new method of inducing convulsions by means of electric current has recently been introduced to this country, and definite advantages are claimed for it. It originated at Rome, being evolved by the Italian workers Cerletti and Bini in an effort to overcome the disadvantages of the drug method. The introduction of the electric method may appear to require some justification, since it necessitates the use of considerable voltage. The disadvantages of the drug methods are well known, and it is only necessary to summarize them here. In our experience the principal drawback is the extreme fear and apprehension engendered in some patients, a fear which is so great as to induce Neustatter and Freeman (1939) to use general anaesthesia in an effort to overcome it. This fear is also a great disadvantage where it is necessary to repeat the injection in order to obtain the major fit. Again, extreme and distressing psychomotor excitement often lasting some hours is met with; also such sequels as vomiting, confusion, and irritability are common in spite of careful preparation of the patient. Transient loss of memory and even gross intellectual impairment have also been reported (Dynes, 1939). Dislocations of the jaw and fractures of spine and femora have occasionally been noted by some observers (Stalker, 1938; McGuinness, 1939), while cardiac complications such as arrhythmias, auricular fibrillation, and heart-block have been recorded (Dick and McAdam, 1938). Difficulties are also encountered from the thrombosis of veins, as well as from their inaccessibility in obese subjects and those whose veins are of poor calibre. To some extent these difficulties can be avoided by the use of triazol, but this carries certain new disadvantages.

Nor is the induction of convulsions by the drug methods devoid of mortality, though this is certainly of low incidence. The report of the Board of Control for the year 1938 gives the number of deaths from cardiazol as ten: no analysis of these figures, however, is given. Without any suggestion of comparison, but merely as an indication that electrically induced methods are reasonably safe, it can be stated that a considerable number of such convulsions have been induced without fatality in patients treated at the Rome clinic. In evolving the new technique Cerletti applied the experience gained in previous research upon the problems of epilepsy undertaken at Genoa. He had produced epileptic fits in animals, chiefly dogs, by means of the normal electric current (125 volts A.C.). This was applied for a fraction of a second, the electrodes being placed in the mouth and the rectum. The technique and the physio-pathological results were published by his pupil Chiauzzi (1934). Together with his assistant Bini, Cerletti continued his researches in Rome. It was Bini who constructed the simple but practical instrument used to regulate the voltage and the duration of the passage of the current. This when perfected was patented in Italy by Bini, and was described by him as an "apparatus for electric applications." In the clinic at Rome where Cerletti carried out his observations the histological examination of the cerebral cortices of dogs was made after the application of much higher voltages than necessary to induce a fit and following the induction of multiple fits. These examina-

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tions showed an absence of such neuro-pathological changes as had been found following insulin coma and in a lesser degree following cardiazol convulsions (Accornero, 1937), which included the presence of haemorrhages, disappearance of Nissl's granules, and other cell changes of a more chronic nature, such as alterations of the cytoplasm, glial alterations, and dilatation of vessels with changes of endothelium. These changes were observed throughout the cortex in two groups of dogs, the first having been killed by insulin administration and the second by other means following thirty insulin comas.

Technical Aspects, including Description of Apparatus

The apparatus is essentially a modification of the Bini patent designed and built for us by a British firm, the "Solus" Electrical Co. Ltd. (Plate, Fig. 1). It consists of two independent electrical circuits. The first is a low-voltage D.C. circuit suitable for direct measurement of the patient's head resistance. The second is capable of applying to the electrodes an A.C. voltage which can be varied by means of a tapped auto-transformer between 50 and 150 volts. It is able to deliver 2,000 mA, and the time of the shock is automatically limited by means of an electrical time switch adjustable between 0.1 and 0.5 second. The apparatus is housed in a light portable switch-table.

The Electrodes.—These consist of four silver-plated straps mounted on a rubber cushion and fixed to a chrome metal frame. The whole is mounted on an adjustable clamp connected to the apparatus by a two-core lead (Fig. 2).

Application of the Electrodes.—The electrodes are covered with a piece of thin linen soaked in 20 per cent. salt solution. Over the head at the junction of the temporal and parietal bones contact paste (the formula for which is here given) is smeared and the electrodes are firmly applied to the patient's head. Care must be taken that they are in close apposition, or the measuring of the head resistance will be unreliable.

Formula for Contact Paste

Solution No. 1.—Dissolve 50 grammes of gum tragacanth and 60 grammes of glycerin in 1 litre of tap water by heating on a water bath for two hours, stirring continuously.

Solution No. 2.—A saturated solution of common salt in water, 1 litre.

Solution No. 3.—100 grammes of distilled water (hot) and 20 grammes of potassium bitartrate (hot).

Add solution No. 3 to No. 2 and mix with No. 1; then add 3 grammes of pure carbolic acid. Cool and add 500 grammes of powdered pumice-stone, and mix. Should the mixture be too fluid more tragacanth may be added. The advantage of this paste is that it is non-greasy.

Measuring Head Resistance.—The electrodes being connected up, the change-over switch is placed in the position of "Measurement" and the apparatus switched on to the mains. Before measurement the measuring circuit has to be compensated or made independent of incoming mains voltage. This is accomplished by means of a knob marked "Calibration," together with a milliamperemeter, and by inserting a known resistance in the circuit. On switching over from this resistance to the electrodes a potentiometer can be adjusted so as to make the milliamperemeter read on the red line. The patient's resistance can be read directly in ohms on the potentiometer. The apparatus permits of direct measurements of resistances between 0 and 2,000 ohms, and measurements up to 4,000 ohms by adjusting to a green line on the milliamperemeter and multiplying the results by 2.

Shock.—After switching over from "Measurement" to "Shock" the voltage to be applied can be adjusted and pre-read on the voltmeter. The choice of the voltage is based on the previous resistance measurement and on experience. The required shock time is then adjusted on the time switch and the shock will now be applied by means of a press button, which is held down slightly longer than the adjusted time. The electrical time switch terminates the flow of the current after the adjusted time. As a safety measure the time switch is so designed that a breakdown would merely prevent operation. However, as a further safety measure, releasing of the button will instantly break the current, independently of the time switch.

Measurement of Shock Current.—The measurement of the current passing through the head during the shock time is obtained by a ballistic method which permits of direct reading of the milliampere-seconds which have passed through the patient's head during the shock. This reading, together with the setting of the time switch, allows easy calculation of the current in milliamperes, and is therefore useful for obtaining comparative values. This apparatus shows three advantages over the Italian, as follows: (1) the electrical time switch; (2) the ballistic method of measuring the milliampere-seconds; (3) the arrangement for compensation of fluctuation in the mains.

Voltage Determination.—This is largely a matter of experience, and the figures given by the Italian workers appear of little help to us, for in our experience their upper and lower limits of 80 to 115 volts are too low. The lowest voltage with which we obtained a major fit was 90, giving 600 mA through the head. Measurement of the head resistance affords some indication of the voltage to be applied, but it bears little relation to the actual resistance on the "shock" circuit. The voltage used by us varies between 90 and 145, with a time setting of 0.1 to 0.2 of a second.

Results of Passage of Current

These may be described as the major fit and the abortive fit, but in both the immediate effect is loss of consciousness.

The Major Fit.—This is a typical epileptic fit. Consciousness is lost immediately the shock button is pressed, and the fit occurs at once or after an interval varying up to one minute. There may be a cry, but so far we have not observed a cough such as is commonly noted after an injection of cardiazol. The mouth opens and a gag can be inserted. The body is seized in intense generalized tonic contraction, which lasts on an average ten seconds. In this stage the face becomes flushed and there may be dilatation of the vessels of the skin of the upper part of the chest. This is followed by the clonic stage, during which the face may become cyanosed and there may be frothing at the mouth. In one case only have we observed complete arrest of respiration, which was readily overcome by pressure on the chest. In this stage there may be voidance of urine and evacuation of faeces. The pupils during the fit are widely dilated and fixed and the conjunctivae may be injected. At the end of the fit the deep and superficial reflexes are usually absent, but within a minute or two the tendon jerks are found to be very brisk or even exaggerated and knee and ankle clonus have been elicited in some cases. The systolic blood pressure often shows a fall of 10 mm. Hg immediately after the fit, and the pulse is found to be slower. These effects have passed off in about five minutes. The average duration of the fit is fifty seconds, and the patient is restored to consciousness and able to talk somewhat drowsily within a few minutes. Until consciousness has returned some patients are slightly restless, but we have not observed any psychomotor excitement such as is so commonly met with after cardiazol.

The Abortive Fit.—Here again consciousness is suddenly lost for a few seconds. In most cases there is an initial generalized myotonic flexion of the body which is often strong enough to cause the patient to assume a sitting posture for a moment. The face becomes flushed, the pulse rate is accelerated, and the blood pressure shows an increase of about 10 mm. Hg. Respiration may be shallow and the face assumes a dusky hue. The pupils may be dilated and fixed, but most often they react briskly. Although this is what is most commonly seen during an abortive attack the effect may be so slight as to cause only loss of consciousness and flushing of the face. The electrodes may be reapplied within two minutes and another attempt made to produce the major result. No objection is raised to this by the patient, and there appears to be no contraindication.

In both of these types of attack there is a retrograde amnesia for a period of about two minutes before the passage of the current. Fifty major fits have been induced without untoward occurrence. The only complaint made by some patients is of slight headache.

Summary and Conclusions

A method of inducing epileptiform convulsions by electricity has been described. The chief advantage of this method over other convulsion therapies is that it ensures instantaneous loss of consciousness, so that there is no fear or apprehension. While in a preliminary report such as this it is not possible to make definite statements regarding therapeutic results, we have every reason to believe that these will compare favourably with those obtained by other methods, and indeed may be better, as the patients do not live in fear and dread of the next treatment day. Another advantage is the absence of recovery symptoms such as psychomotor excitement and vomiting.

We have also applied this method to patients in insulin coma with entire absence of ill effects.

We are indebted to Dr. T. P. Rees, medical superintendent of the Warlingham Park Hospital, for permission to publish this report and for his active interest in the work; also to the "Solus" Electrical Co. Ltd. for their technical advice and co-operation, to Drs. Kalinowsky and Kurt Fried for certain contributions.

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TREATMENT OF OTORRHOEA BY ARGYROL DISPLACEMENT

BY

W. OGILVY REID, M.A., B.Sc., M.B., F.R.C.S.Ed.
Deputy Medical Superintendent, Downs Hospital (L.C.C.), Sutton, Surrey

A very large percentage of the cases of chronic otorrhoea which come to this hospital require operation on the mastoid to cure. Conservative treatment is, however, extensively used where operation does not appear to be called for and also in "borderline cases" in which there is just a chance that operation can be avoided. In addition, following mastoid operation, some further treatment to the middle ear is often required to achieve a dry ear. Of the various conservative measures adopted I have been most favourably impressed by argyrol displacement. As a local application argyrol is well recognized by those who treat the discharging ear, but it would appear that the use of it by the displacement method is not so frequently resorted to. This article is written to advocate its wider use.

It is a truism that none of the ear drops in general use can be expected to benefit the condition if they do not get the length of the diseased middle-ear mucosa at least. For this reason thorough toilet of the ear to remove any obstructing discharge or debris is regarded as essential before the instillation of the drops. Even so, the medicament inserted cannot in most cases be expected to reach the furthest recesses of the tympanum and epitympanum, where mucosal disease may lurk. It is in an attempt to achieve this desirable object that resort is made to the displacement method of Proetz. The principle of the latter is that air is evacuated from the middle-ear cleft as completely as possible and the appropriate fluid is then allowed to fill up the vacuum so created. The process is a gradual intermittent one, and the complete "displacement" of the air and replacement by drops is achieved by repeated partial evacuations until something approaching the ideal is achieved—that is, the complete filling of the middle ear and its recesses by the medicament, in this case 10 per cent. argyrol solution. It will be recalled that the same principle is applied in order to fill the middle ear with zinc sulphate solution before the electric current is passed in the treatment of otorrhoea by ionization.

Choice of Cases

Cases definitely requiring operation are, of course, excluded. In cases doubtfully placed in this category the method is worth a trial in the first instance. Otherwise, any case of chronic otorrhoea may receive the treatment. Of those, the cases with a fairly thick muco-purulent or frankly purulent discharge do best, and for the cases at the other end of the scale, as it were, with a purely mucoid discharge, ionization would appear to be preferable and achieves the better result.

Technique of Argyrol Displacement

The ear is cleaned thoroughly. Then, the patient lying with the affected ear uppermost, the latter is filled with 10 per cent. argyrol to the lower level of the tragus. The Siegle speculum is then fitted into the meatus with the bulb compressed. When satisfied that the connexion between speculum and meatus is airtight the bulb is allowed gradually to expand. This manœuvre is repeated three times.

In many cases it will be found that the essential airtight connexion between Siegle and meatus cannot be achieved, and in those resort is made to the alternative method of tragal pressure. A piece of wool on top of the finger is held in front of the tragus and the latter then pressed forwards over the meatus so as to occlude it completely. A little further pressure is now exerted so as to force this temporary "cork" slightly into the meatal opening, after which it is released gradually, when a definite sensation of suction is experienced. This is repeated three times or so. The level of the argyrol in the meatus will now be observed to have lowered appreciably, indicating that the fluid has passed successfully into the middle ear by displacing the air in the latter. The outer ear is finally packed with cotton-wool to absorb surplus argyrol and the patient allowed to stand up. The treatment is repeated daily.

Discouragement should not result from the fact that the discharge may be more in quantity and worse in quality in the early stages of treatment. On the contrary, this is actually an indication that the case in which it occurs is likely to respond well eventually. When one remembers that argyrol acts essentially by promoting a local leucocytosis and so indirectly bringing about control of the infection the sequence of events is more readily understood. In a favourable case these are as follows. About the sixth day of treatment the discharge becomes very much greater and may be more purulent in character. This may continue for as long as a fortnight before the next phase becomes manifest. The discharge now becomes progressively more mucoid, and gradually diminishes in amount until the ear is only moist. The argyrol is then omitted and the ear simply cleaned out daily, dried with spirit, and a little boric powder insufflated.

Results of Treatment

The following is an analysis of the results achieved in a series of 116 cases:

Cases cured	72 (62.07 %)
Cases not improved	37
Cases not completing treatment for various reasons	7
Cases readmitted for treatment	2

Without an adequate control series it is of course unscientific to claim any particular virtue for a method, but one feels it must be agreed that a 62.07 per cent. cure rate justifies the use of argyrol displacement, especially as it is a simple procedure which can quite well be carried out at clinics treating large numbers of cases. As the number of attendances is a factor of importance in the organization of such clinics, it should be emphasized that although the treatment must be repeated daily and no breach of continuity be allowed to occur the total period of treatment need not be a long one. In this series the average number of treatments necessary to achieve a dry ear was only twelve, although quite wide variations were noted, the least number required being three and the greatest thirty-six. Of the thirty-seven failures recorded a few were cured by ionization; but the majority came to operation, and can therefore hardly be regarded as a reflection on the method here described as a non-operative treatment.

The eradication of nasopharyngeal infection is essential in any attack, operative or non-operative, on the discharging ear, and that measure was of course not omitted in the cases in this series. Nevertheless the value of this method as a means of permanent cure of otorrhoea is not established here. But such criticisms may be levelled with equal weight against any other conservative procedure—the arrest of discharge for a reasonable length of time being accepted as the criterion of success.

Conclusion

It might be well to conclude this article by emphasizing the fact that the treatment here advocated can be quite satisfactorily carried out by a nurse trained in the technique, and at the same time I take the opportunity of acknowledging the efficient work of the staff who treated the cases in the above series under my supervision. Thanks are also due to Dr. C. Price, medical superintendent of the hospital, for his helpful interest in the work.

Genoscopolamine.—Genoscopolamine is an aminoxide of the alkaloid scopolamine in the form of the hydrobromide, and was first produced by Polonovski in 1925. According to the authors it is a useful substitute for scopolamine, atropine, or stramonium in the treatment of Parkinsonism. In the twenty-two cases treated it had a beneficial effect, especially upon rigidity, tremor, muscular weakness, salivation, and upon the oculogyric crises. Its toxicity is low, and it is especially effective when used in conjunction with small doses of atropine. —Genoscopolamine: Its Use in Parkinsonism.' J. H. Scharf and S. T. Manong.—*J. nerv. ment. Dis.*, May, 1939, **89**, 682.

ACUTE TORSION OF THE GALL-BLADDER

BY

A. H. BARBER, M.A., M.B., M.R.C.P., F.R.C.S.

Late Lecturer in Anatomy in the University of Birmingham

Torsion or axial rotation of the gall-bladder cannot occur in a normally situated organ. In the vast majority of cases the gall-bladder lies in a shallow fossa on the under surface of the liver, and only its fundus and posterior surface are covered by peritoneum. In its development the gall-bladder is intimately associated with the liver. The liver is formed as a diverticulum from the ventral surface of the foregut. This diverticulum grows forwards into the septum transversum and gives off solid buds which form the right and left lobes of the liver. The original diverticulum from the foregut forms the bile duct, and from this the cystic duct and gall-bladder are developed as an outgrowth or evagination. This outgrowth is normally of such a length that only its distal end (the fundus) comes to lie below the level of the anterior border of the liver. In very exceptional cases, however, it is so elongated that the whole of the ultimate gall-bladder lies below the anterior border of the liver, and the fossa for the gall-bladder is occupied by the lengthened cystic duct. In these circumstances the gall-bladder is completely invested with peritoneum and hangs freely in the abdomen, and unless this very rare anatomical abnormality is present true torsion cannot occur.

In certain cases the peritoneal relations are such that the gall-bladder is attached to the liver by a double fold of peritoneum which forms a mesentery. No doubt this will allow of considerable movement of the gall-bladder, but no complete axial rotation can take place. With regard to torsion, the peritoneal arrangements are of little significance compared with the all-important relation of the gall-bladder and cystic duct to the liver. While abnormalities of the bile ducts have been carefully studied, very few statistics appear to have been published on anomalies of the gall-bladder. Brewer (1899) states that in 100 dissections of the gall-bladder and biliary ducts he found five cases in which the gall-bladder was attached to the liver by only a double fold of peritoneum, but no record is given of any case where the gall-bladder was attached to the liver merely by the pedicle of the cystic duct and vessels. The latter condition must be extremely rare, and torsion in these circumstances becomes such a simple matter that one would infer that it must almost inevitably occur. The mechanism producing it would appear to be the movements of the gastro-intestinal tract. Such a theory appears to offer an explanation of the following case of acute torsion.

Case Report

The patient, a warehouseman aged 46, was admitted to Boundary Park Hospital, Oldham, on Monday, January 23, 1939. On the previous day, just before his dinner at 2 p.m., he was seized with a very severe abdominal pain which was in the right upper abdomen; it "doubled him up" and he felt "as though he had been kicked in the stomach." He had had his breakfast at about 8.30 a.m., and until the onset of the sudden severe pain he had felt perfectly well. He was in fact looking forward to his Sunday dinner, and said he felt he could have eaten two; but through the onset of the pain he was unable to eat anything. The pain continued all day, and at 11 p.m. he vomited. During the night he could not sleep and in the morning vomiting became persistent.

At about 11 a.m. he was seen by his doctor, who sent him to hospital. I saw him immediately after his admission.

He was a well-developed man of spare build; he suffered from chronic bronchitis, but otherwise had had no previous illnesses of any significance. His abdomen was scaphoid and very rigid, with considerable tenderness in the right hypochondrium and epigastrium. No mass was palpable; his temperature was 99°, pulse 112, and respirations 24. A diagnosis of perforated peptic ulcer was made and immediate operation decided upon.

The abdomen was opened through a right upper paramedian incision, and on going through the peritoneum a deep blue-black tensely distended structure literally popped through the wound. It was about the size and shape of an orange, and was seen to be an abnormally situated gall-bladder which had twisted through 360 degrees in a clockwise direction. Its blood supply was cut off and it was becoming gangrenous. The whole of the gall-bladder was completely covered with peritoneum and was suspended from the anterior border of the liver by the cystic duct and vessels. The cystic duct, which was much longer than usual, continued its course superficially embedded in the liver in what is normally the fossa for the gall-bladder. There was a considerable amount of blood-stained fluid in the upper abdomen. The gall-bladder was removed by placing a ligature around the cystic duct and vessels at the level of the anterior edge of the liver. It was an extremely simple operation; no easier cholecystectomy could ever be performed. A small drain was placed in the upper abdomen through a separate stab incision. On examination afterwards the gall-bladder was found to be full of blood-stained bile; there were no stones, and the wall was not thickened except by oedema. Until the torsion had occurred the gall-bladder had apparently been physiologically normal. The patient made a good recovery; his bronchitis troubled him somewhat, but he was discharged on February 28.

Commentary

Several points about this case call for comment. With regard to the diagnosis one had no hesitation in believing it to be a perforation. The persistent vomiting was against this diagnosis, but the extreme rigidity and tenderness appeared to leave no room for doubt. It seemed probable that a small leak had occurred on the previous day and had later recurred on a larger scale. But apart from the precise diagnosis, the clinical picture could not be interpreted as anything but an "acute abdomen" requiring immediate surgical intervention. The fatal mistake of regarding it as a severe case of cholecystitis and biliary colic appears impossible.

The sequence of events in the history seems to provide an explanation of the mechanism of the torsion. It occurred immediately before the patient's Sunday dinner, when waves of peristalsis in the fasting stomach would be at their maximum. These waves passing down the stomach from left to right would tend to rotate the full gall-bladder in a clockwise direction; and once a protective spasm of the recti had been called into play this muscular contraction would tend to keep up the torsion rather than to undo it. Lastly, the treatment of the condition is extremely simple and effective.

Most of the cases hitherto recorded have been in elderly women, and according to Short and Paul there have been only six cases recorded in males. The first account of the condition was published by Wendel in America in 1898. In describing his case Wendel commented on the anomalous length of the cystic duct, which permitted the extreme mobility and migration of the gall-bladder; and in performing cholecystectomy he divided the cystic duct at the anterior border of the liver. In more recent years cases have been reported in this country by Lett (1909), Frankau (1922), and Irwin (1921), while Short and Paul in 1934 added three others and gave a comprehensive account of the subject together with a summary of all previous cases.

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Clinical Memoranda

Treatment of Foetal Hydrocephalus

(WITH SPECIAL PLATE)

Foetal hydrocephalus may be a source of considerable difficulty during delivery. The usual methods of treatment are through the vagina—for example, puncture of the skull or tapping the spinal canal: these may be difficult to perform, and since the patient is in labour and the lower uterine segment is already considerably stretched and attenuated, vaginal manipulation may be the factor causing rupture of the uterus. It has been suggested by Walsh that these disadvantages may be overcome by transparietal aspiration of the foetal skull. The following is an account of a case treated by this method.

A primigravida aged 23 was admitted to hospital on February 24, 1939. The head was not fixed, and *x*-ray examination showed foetal hydrocephalus (Plate, Fig. 1). On the same date 14 ounces of cerebrospinal fluid were withdrawn from the skull. Fig. 2 shows the skull after aspiration. Labour began on February 25, and spontaneous delivery took place on the 27th, after thirty-eight hours in labour. The child weighed 5 lb. 8 oz. The patient made a good recovery and was discharged on March 13.

The technique of aspiration is simple. The skin of the abdomen being prepared and the bladder emptied by catheter, the skin is anaesthetized by injection of 1 per cent. novutox in the midline just above the symphysis pubis. The foetal head is fixed with one hand on the abdomen, and a long intramuscular needle attached to a 10-c.cm. syringe is inserted through the anaesthetized area of skin into the skull. Aspiration is repeated till no more cerebrospinal fluid can be withdrawn.

The possible disadvantages of the method are injury to the bladder or puncture of a loop of bowel, which, rarely, may lie in front of the uterus. The advantages are the ease of performance, the absence of shock, and the lessened risks of sepsis and perforation of the uterus.

WILLIAM MORE, M.D., D.R.C.O.G.,
Assistant Medical Superintendent, Stepping
Hill Hospital, near Stockport.

Fracture-Dislocation of Cervical Spine

(WITH SPECIAL PLATE)

The following unusual case is probably worth being placed on record.

CASE REPORT

In July, 1938, a very miserable Egyptian peasant woman, about 30 years of age, came to this hospital with a two-months history of having fallen from a height of nine or ten feet, with resulting injury to the neck. A diagnosis of fracture-dislocation of the cervical spine was made. No paralysis of limbs or trunk was found, reflexes were normal, and respiration appeared normal also. A lateral radiograph (Plate, Fig. 1) showed a surprising state of affairs: there was a forward dislocation between the atlas and axis to a degree that would seem incompatible with continued existence. The woman was not very intelligent, but careful questioning made it clear that although she was stunned by the fall she never suffered from any noticeable paralysis at any time.

Treatment was begun with gradual traction, which was applied by means of head-harness and a pulley and weights, with the patient lying flat on her back, with no pillow, the head of the bed being raised on blocks so as to obtain counter-traction from the body weight. After two days a small pillow was placed under the shoulders and lower cervical vertebrae to increase the extension of the neck. After eight days the dislocation seemed almost reduced, but no further progress was apparent, and the patient was getting distinctly restive. Accordingly she was anaesthetized carefully and traction was exerted, while the neck was cautiously manipulated and a plaster helmet and collar was applied, extending from vertex to upper thorax, leaving only the face uncovered. The result of this manipulation is shown in Fig. 2 (the bones had to be outlined in this and the next figure as the thickness of the plaster made the films rather indistinct). The reduction was not quite perfect, but was considered to be as good as was possible.

The woman's husband would not leave her in hospital indefinitely, and before long we were obliged to let her go out, after extracting a promise that she would attend the out-patient department at least once a month. She did not, however, visit the hospital again till October, 1938, when the plaster was found to be firm but filthy. She complained of headache, and the ears were ulcerated and oedematous; this latter was due to the plaster having been nibbled away to allow her to hear better. The plaster was removed, and the patient was kept flat on her back till her skin and ears had recovered. She refused to have another "helmet" applied, and so use was made of the following device, which Dr. Kamel Hussein of Cairo looked up for me in a French surgical journal:

A plaster collar was applied from the upper thorax to just below the occiput, leaving also a little freedom for the lower jaw. A metal loop was incorporated in the plaster at its upper end posteriorly; extension of the upper cervical spine was maintained by means of a band going round the forehead and tied firmly to the loop behind. The patient slept on her back at night with a pillow under her shoulders, and the band was loosened to give her a rest from pressure on the forehead.

The patient was unwilling to stay in hospital for more than three weeks, by which time she was educated in the use of the appliance and seemed less discontented than before. The radiograph taken at that stage showed a slight slipping of the reduction, but her refusal to undergo further manipulation forced our hands, and she was allowed to go out in plaster. In this radiograph (Plate, Fig. 3) there appears to be a bony mass extending from the body of the axis to the basi-occiput. The patient did not appear again till January, 1939, when the plaster was found to be in a satisfactory condition. She was requested to come again after a month, but, despite letters and offers of free treatment and travelling expenses, she has refused to come near us, her excuse being that she was quite well and could see no reason for making a long journey. It is a pity that another, and probably very interesting, x-ray film is not available.

A member of our Egyptian staff was travelling near her village in May, 1939, and visited her at my request. He reported that she had removed her plaster and seemed to be quite well. In July, 1939, Dr. Griffiths of this hospital happened to be at her village, and so examined her. He reported that her appearance was normal, that she held up her head well and could nod quite effectively, but that lateral movements, though present, were limited. The neck seemed firm; a bony protuberance could be felt below the occiput, and she had an increased anterior curve of her lower cervical spine (probably compensatory). In fact, a radiograph, if available, would probably closely resemble Fig. 3. Whether or not she is living "on the brink of a precipice" I would not like to say. Anyhow, the end-result would appear to be functionally satisfactory.

CONCLUSION

I am aware that the result in this case is not perfect, but conditions made it very difficult to do any better. Such a fracture-dislocation is not unique, but the extreme degree of displacement, the complete absence of paralysis, and the time elapsing between the injury and proper treatment make the case a distinctly unusual one.

I am indebted to the radiologist for his help and to the principal medical officer, Dr. N. J. Griffiths, for his permission to publish this case.

E. N. CALLUM, F.R.C.S.Ed.
C.M.S. Hospital, Old Cairo,
Egypt.

Union in a Pathological Fracture due to Metastases from Gastric Carcinoma

(WITH SPECIAL PLATE)

Union in fractured bone which is the site of secondary carcinoma is unusual except in the case of prostatic carcinoma. The following rather incomplete case record seems rare enough to justify publication.

CASE REPORT

The patient was a married woman aged 71. I was first asked to attend her at her home in June, 1938. Her complaint was that she felt weak, had no appetite, and had nausea. She had no vomiting, was anaemic, and had lost weight. Examination revealed a small fixed tumour at the pyloric part of the stomach. There was no enlargement of the liver and there were no palpable glands anywhere. The other abnormality found was auricular fibrillation. I advised my patient to go into hospital for complete investigation, but this she absolutely refused to do. She was a fine old lady, but shy and dour—of the old Scottish school. Having told the patient's relations what I thought of her condition, I did what I could to make her as comfortable as possible, using simple therapeutic measures for the cardiac and gastric disorders.

In November, 1938, she complained of neuralgic pain in her right arm. This did not have any definite nerve distribution, and responded to analgesic drugs. The cardiac condition improved and the gastric condition remained much the same. On December 13, while up and about in the house, she was lifting an empty enamel washing basin with both hands when she was seized with acute pain in her right arm and dropped the basin. The pain was sickening; the power of the arm was lost and unnatural mobility was present. I saw her shortly afterwards and found that she had a fracture of the middle of the right humerus with overlapping of fragments. Having put on temporary splints, I insisted on removing her to hospital. At Kilmarnock Infirmary under morphine and local anaesthesia I put the arm up in a U-shaped plaster splint reinforced around the middle and with the plaster carried up over the tip of the shoulder. The arm was then radiographed. and the plates showed a pathological fracture of the middle of the humerus (Plate, Fig. 1). The radiologist's report was "pathological fracture of humerus due to metastases from a possible carcinoma."

The patient returned home in three days' time with a fore-arm sling. She was comfortable and free from pain in the arm. Thereafter her general condition slowly deteriorated. In January, 1939, a new complaint was neuralgic pain in the right lower jaw. There was no clinical evidence of bone change. In February the only change in her condition was a slight haemoptysis, and some dullness was found at the right lung base. This settled and did not recur; it might have been caused by a small pulmonary infarction, since the cardiac condition was more unsettled.

On April 5, at the Infirmary, I removed the plaster from the arm and managed to get radiographs of it (Fig. 2) and of the lower jaw. The fracture of the arm was firmly united, but I put a light plaster collar round the limb for safety. The jaw showed metastases. The light plaster was removed at home on June 5, and both the patient and I were delighted with the free and confident arm movements. Firm bony union could be felt. By this time there was enlargement of the pyloric tumour, enlargement of liver, ascites, and marked emaciation. The patient was troubled with epigastric pain and could swallow only small quantities of fluid. She required morphine for the pain. She died one week after removal of the light plaster, having had an obstructive type of vomiting with haematemesis and signs of advanced carcinoma of the stomach. She died on June 12, one year after I had first seen her.

COMMENTARY

The clinical picture without the aid of gastric analysis, radiographs, etc., was that of carcinoma of the stomach.

The fracture of the right humerus was pathological and apparently due to metastases from a carcinoma.

The fracture was completely united after four months—confirmed clinically and by radiographs.

IAN B.-K. MACGREGOR, M.B., Ch.B.,
Assistant Surgeon, Kilmarnock Infirmary.

Torsion of an Ectopic Gestation

(WITH SPECIAL PLATE)

The case of ectopic gestation described below presents two unusual features and seems to be of sufficient interest to justify its publication. The majority of ectopic gestations do not cause severe symptoms until some complication has occurred, and a laparotomy is generally performed only when rupture of the tube or abortion has brought on intraperitoneal haemorrhage. In the present instance the symptoms that resulted in the patient's admission to hospital were found at operation to be due to torsion of the tube, which was impacted in the pouch of Douglas. Secondly, pregnancy, whether tubal or uterine, at the age of 52 years is an unexpected condition and one unlikely to be considered in differential diagnosis.

CASE REPORT

A married woman aged 52 was admitted to Redhill County Hospital in April, 1939, with a history of abdominal pain which had started three days previously. The pain was described as "gnawing," and was at first generalized. Later it became more severe on the right side than elsewhere. The onset of the attack was accompanied by vomiting. About one month previously she had been admitted to another hospital on account of a similar attack. She was the mother of six children, the youngest of whom was 13 years old. Questioned after the operation she stated that she had always menstruated regularly and that she had continued to do so without any intermission, except during her pregnancies, until two months before the onset of her present illness, when she had missed a period. One month later she again menstruated "normally."

On examination she was of average build and looked somewhat young for her age. Her temperature was 97.2°, pulse 84, respirations 20. Her tongue was clean. There was marked abdominal rigidity on the right side with localized tenderness over McBurney's point. On vaginal examination she was found to have a cystocele. The uterus was normal in size. There was a fullness palpable in the right fornix and there was tenderness in the same situation. The rectum was full of hard faeces. A diagnosis was made of acute appendicitis with a probable pelvic abscess.

Operation.—I opened the patient's abdomen through a right subumbilical paramedian incision. No free fluid or pus was seen. The appendix appeared normal. A search was then made in the pelvis and revealed a mass tightly impacted in the pouch of Douglas. Some recent adhesions were separated and the mass delivered. It was then found to consist of the right Fallopian tube, which was tightly twisted on itself several times at its isthmus. The tube was distended to the size of a large hen's egg and was of a dark plum colour. Salpingectomy was performed easily and the abdomen was closed without drainage. The patient made an uninterrupted recovery and left hospital in good health.

The appearance of the haematocele at once suggested an ectopic pregnancy, though the age of the patient made this seem rather unlikely. The tube was accordingly sent for section. This shows a quantity of blood clot in the midst of which are a number of typical placental villi (see Plate).

I am indebted to Mr. J. N. Deacon, medical superintendent of Redhill County Hospital, for permission to publish this case.

FRANK FORTY, M.B., B.S., F.R.C.S.,
Surgeon, Redhill County Hospital,
Edgware.

Colles's Fracture and Backward Dislocation of the Elbow

The article by Mr. R. Salisbury Woods in the *Journal* of October 14, 1939 (p. 767), prompts me to write of a somewhat similar interesting case.

CASE REPORT

On April 18, 1939, a man aged 38 was admitted to the Oldham Royal Infirmary with a history of having fallen about sixteen feet from a ladder on to his right hand. Examination revealed a posterior dislocation of the elbow-joint. His wrist was swollen and there was pronounced radial deviation of the hand and wrist. *X*-ray examination showed marked postero-lateral dislocation of the right elbow, the radius and ulna being displaced laterally to the extent of the width of the lateral condyle of the humerus. Radiographs of the wrist-joint revealed a fracture through the "waist" of the carpal scaphoid bone, with considerable separation of the fragments. The ulnar styloid process was detached. The semilunar bone was dislocated towards the flexor surface.

Under a general anaesthetic the dislocated elbow was reduced. Hand traction was made at the wrist for about two minutes and a scaphoid non-padded plaster-of-Paris cast put on. A lead and opium dressing was applied to the elbow, and the arm was rested in a sling, with the elbow-joint extended to just beyond a right-angle because of the gross effusion. Further *x*-ray examination showed reduction of the posterior dislocation of the elbow and good position of the scaphoid fragments, but the dislocated semilunar bone was still unreduced. On the following day the plaster cast was removed. A local anaesthetic was given, novutox 2 per cent. being injected into the wrist, and manual traction was applied to the wrist with counter-traction to the forearm for a full ten minutes. Later radiographs showed that the displaced semilunar bone was reduced. A scaphoid plaster cast was reapplied. Immediate active use of the fingers was begun, and active movements of the elbow-joint were started on the fourth day.

On May 30 there was practically full extension of the elbow, with flexion limited to 60 degrees. On June 21 full flexion and extension were present. Subsequent *x*-ray films showed that the scaphoid bone was uniting, and on September 6 further radiographs disclosed good union of this bone, with slight limitation of movement at the wrist-joint. The patient was discharged from hospital on September 13—five months after the accident—with full function of the elbow- and wrist-joints.

I wish to thank Mr. H. Poston, honorary orthopaedic surgeon, for his supervision of the treatment and for permission to publish this case.

MICHAEL LENTIN, M.B.,
Senior House-surgeon, Oldham
Royal Infirmary.

Reviews

A TEXTBOOK OF PATHOLOGY

Pathology. An Introduction to Medicine and Surgery. By J. Henry Dible, M.B., F.R.C.P., and Thomas B. Davie, B.A.(Cape), M.D., M.R.C.P. (Pp. 932; 374 illustrations, including 8 plates in colour. 36s.) London: J. and A. Churchill Ltd. 1939.

There are few full-length textbooks of pathology by British authors, and the appearance of a new one is therefore in any case an important event. If its merits as the student's principal guide in this subject make a wide appeal it is something which does not happen more than two or three times in a generation, and the new work by Dible and Davie certainly will appeal. The purpose of studying pathology has never been better expressed than in their preface, and the authors' aim of enabling the student to envisage the processes underlying the clinical manifestations of disease has been admirably followed out. A novel and commendable feature is the interpolation between the sections on general and regional pathology of another entitled "Special Infections," in which infective disease is classified aetiologically. Chapters on diphtheria and anthrax, as contrasted types of bacterial infection, are followed by ten others, among the subjects of which tuberculosis, virus diseases, and infections by the pyogenic cocci are obvious choices in view of their characteristic nature and the variety of tissues which they may involve. Others have not so clear a claim to description here, and the section might well have included a chapter on the special features of infection by protozoa. Both here and elsewhere in the book the characters of the micro-organisms concerned are fully described, as are the mechanisms by which the body resists infection: indeed, for most purposes, except that of technique, this work will, incidentally, almost serve as a textbook of bacteriology.

Just as there is much to commend, there is not a little to criticize. Among matters of fact are a diagram of the renal arterial system (Fig. 27) which is anatomically incorrect, and the devastating suggestion that chronic phthisis predisposes to squamous-celled cancer of the lung. The whole subject of lung cancer is dealt with in only nineteen lines. There is much that is highly unorthodox, if not positively untrue, in the chapters on arterial disease: atheroma is not usually believed to occasion cardiac hypertrophy, as is deliberately asserted on page 566, nor, as stated on the following page, is it "the common cause of senile gangrene of the extremities"; this is a consequence to be ascribed more exclusively to Mönckeberg's sclerosis, which is described later. The doctrine that atheroma can result from raised blood pressure is also highly disputable, and its repetition by an examinee might well be detrimental to him. In describing tumours of bone the authors appear to accept the term "osteogenic" as correctly describing growths in which bone is formed, whereas it should be restricted to those of osteoblastic origin. In contrast to the usual clearness of the teaching is the highly abstruse argument which opens the chapter on diseases of the reticulo-endothelial system; the authors' natural desire to define their own opinion on a debatable subject has here made that subject too difficult for the ordinary reader. The book is easily readable, but picturesque language is rather forced in some places, and misspelt words are unduly frequent: "pacchymeningitis" occurs repeatedly, as does "empyrical," which has evidently exchanged a letter with "saprophite."

To set against these faults there are many chapters of outstanding merit, among which those on diseases of the alimentary tract, on tuberculosis, and on the causation of tumours are particularly successful. The historical data introduced into the text often add greatly to its interest. Illustration is lavish; a few drawings are over-emphatic of essential features (for example, Fig. 215), but the photographs used reach a very high standard of excellence. The book is assured of a wide popularity.

FRACTURES AND RELATED INJURIES

Fractures and Other Bone and Joint Injuries. By R. Watson-Jones, B.Sc., M.Ch.Orth., F.R.C.S. (Pp. 724; 1,040 photographs, x-rays, and diagrams, many in colour. 50s. net, postage 1s.) Edinburgh: E. and S. Livingstone. 1940.

This magnificent volume covers the whole field of fractures and related injuries. It is based upon a series of over 47,000 cases, and as these have been followed up at frequent intervals for long periods the methods and results described may be accepted with confidence. Moreover, every statement which is made is backed by superb radiographs and illustrated by outline drawings which leave no possible doubt of the author's meaning.

The volume opens with a general description of the principles of fracture treatment, including chapters on the mechanism of repair, the causes and treatment of delayed union, of joint stiffness, and of other complications. Perhaps the most interesting and original chapter in this section is that on avascular bone necrosis, which will, we venture to think, reveal to many surgeons the cause of ultimate failure in what had at first appeared to be entirely successful operations. There follow chapters on radiographic diagnosis, on the general principles of reduction and immobilization, and on the treatment of open and infected fractures. A short but interesting section follows on pathological and birth fractures in various regions of the body.

Fractures of the spine are described with the care demanded by their frequency and by the great changes which have taken place in recent years in their treatment, while the description of cord injuries, though brief, is adequate for the present purpose. It is, however, to injuries of the limbs that one naturally turns with the greatest interest, and here the vast experience of the author is revealed on every page. Every possible injury involving the bones or joints is described in the utmost detail and its treatment is discussed with a clearness of outlook which is quite remarkable. The author has avoided the error of describing innumerable methods and has confined himself to those which he has found useful and which are standardized in regular practice.

Where every detail has been studied with such care it is difficult to choose any subject for special reference, but the chapter on injuries of the hip stands out as a masterpiece. When it is remembered that at least fifty different methods have been described for the insertion of a Smith-Petersen pin one is grateful to the author for limiting his description to a simple and accurate technique which should satisfy the most exacting surgeon. Moreover, the difficulties that may arise and the traps into which the surgeon may fall are fully discussed, and no room can be left for doubt that the methods described are sound.

Mr. Watson-Jones has succeeded in producing a volume worthy of the Liverpool School and of his great predecessors there. In soundness of judgment and sanity of outlook it could not be surpassed. The absorbing interest of the book is increased by the beauty of the illustrations, and it is assured of a very warm reception. It could not have appeared at a more opportune moment.

MANIPULATIVE THERAPY

Treatment by Manipulation. By H. Jackson Burrows, M.D., F.R.C.S., and W. D. Coltart, M.B., F.R.C.S. (Pp. 36; 30 figures. 5s. net.) London: Published by the *Practitioner;* in conjunction with Eyre and Spottiswoode. 1939.

Manipulative surgery—the authors criticize the term as tautological—has produced a spate of literature in recent years. The surgical profession can certainly no longer be accused of having neglected its study, although the number of unqualified practitioners who indulge in it is still large. The public still believe that these unqualified manipulators have some special methods or some personal touch which are more important than the knowledge of surgery and pathology, and it is not unusual for a patient to greet an orthopaedic surgeon with the statement, "I don't know whether I was right in coming to you; perhaps I should have gone to an osteopath (or a bone-setter or chiropractor)."

This little book deals simply and solely with the routine methods of manipulation used by the authors. It is based upon a series of over 800 manipulations carried out at St. Bartholomew's Hospital, so that, although others will be sure to criticize and claim that they have other and better methods, at least we have here a substantial experience. Indeed, methods should be individual; a grip or a method of applying force need not necessarily be stereotyped; a method which comes naturally to one may be awkward to another. But the descriptions and the illustrations give an excellent basic guide. The short section on general considerations is an admirable example of brevity and lucidity in which every word and phrase counts. Special points may be mentioned—for example, the advisability of re-examination immediately before anaesthesia so that the surgeon reminds himself of the range of movement and of the painful movement, the presence of a small organic basis in hysterical cases, and the necessity for mobilizing and strengthening exercises after manipulation, in contradistinction to massage and electrical treatment carried out by the masseur. Finally the dangers of and failures in manipulation are summed up in less than two pages. This book does not pretend to do a great deal, but what it includes it does well.

TUBERCULOSIS AND PUBLIC HEALTH

Tuberculosis and National Health. By H. Hyslop Thomson, M.D., D.P.H. (Pp. 244. 10s. 6d. net.) London: Methuen and Co. 1939.

Dr. Thomson states in his preface that during the last twenty years there has emerged a considerable volume of literature on tuberculosis; he has endeavoured to clarify his own views on the subject in the light of present-day knowledge, and trusts that the study may be of some service to those who, in clinical practice or investigation, are closely associated with the disease, and to others who take an interest in the national aspect of the problem. Dr. Thomson is a well-known county medical officer of health who some years back had first-hand experience of the management of tuberculosis. His study is based on a bibliography of 248 references, of which 220 are to English, twenty to American, and one to French periodicals and books; the remaining seven references to Continental work have been studied in abstracts appearing in English journals.

The sections on the incidence and significance of tuberculosis and its relations to nutrition, housing, and the milk supply are up to date, and contain much information with which every tuberculosis worker should be familiar. On the other hand, the discussions on pathological and clinical aspects of the disease contain not only clear and sound deductions but also statements that are vague, misleading, or even inaccurate. We may instance the definitions of "types of tuberculosis" and of allergy, the paragraph on chronic miliary tuberculosis, the list of "stigmata the presence of which should suggest the possibility of a primary tuberculous infection," and this sentence: "In the adult, more especially the young adult, the primary pulmonary focus is generally known as Assmann's focus." Few will agree that a reasonable estimate of the percentage of positive tuberculin reactors among adults in this country as a whole is probably 50 for urban districts and 20 for rural districts, "judging from figures available"—no such figures for the general population are in fact available in this country. And a claim the importance of which cannot be exaggerated—that there is increasing evidence that tubercle bacilli introduced via the gastrointestinal tract produce a pulmonary primary infection in man—should not have been brought forward without stating the evidence; any evidence to this effect has, in the reviewer's belief, long been discredited.

On the other hand, praise must be given to the author's discussion of "open" and "closed" phthisis, his insistence on team work in the management of extrapulmonary tuberculosis, and such a statement as "when one is closely and continuously concerned with the clinical aspects of tuberculosis it is liable to be regarded as a morbid entity requiring special attention in relation to diagnosis and treatment, while the importance of viewing it as an index of the health standard and social conditions of the community is less likely to receive the attention it merits."

To summarize, therefore, the book gives an uncritical review of a narrow cross-section of recent work on tuberculosis, and an uninspiring account of its treatment and prevention. But it contains an excellent survey of the relations of the disease to public health in general, and therefore fulfils adequately the function, as regards this country, implied in the title of the book.

ANALYTICAL PSYCHOTHERAPY

Technique of Analytical Psychotherapy. By Wilhelm Stekel. (Pp. 408. 21s. net.) Translated by Eden and Cedar Paul. London: John Lane. 1939.

That psycho-analysis has proved its usefulness as a method of research into the mechanisms of the mind a large number, if not the majority, of the medical profession will nowadays agree, but its position as a method of practical therapy is less secure. The daily hour's treatment for two to five years can only be for the few, and all but the strictly orthodox school have sought for methods of shortening this course. One of the first of these apostates from full discipline was Dr. Stekel, who in this volume summarizes his method and experience of it. He is not guiltless of hurling abuse and ridicule at those who disagree with him, but that has been observed in other branches of the medical art. This book, as its title indicates, is a description of the course of an analysis by the author's active method, which consists in the intervention of the analyst at certain points when his "intuition" shows him that he may usefully cut short the analysand's interminable associations and restore him to the straight path which leads to recovery. This intuitive intervention is of course a source of ridicule to the orthodox non-interventionists, and it is easy to see that it may be a method of considerable danger in inexperienced hands; but the reader is likely to be impressed, and to believe that this method, used by a physician of the ability and experience of Stekel, is a real advance.

The author lays great stress on the unconscious fight waged by the patient to preserve his illness, and all who are experienced in psychotherapy will recognize the truth of this observation. Stekel admits that the patient often wins, and indeed only succumbs as a result of his love (transference) for the physician. An interesting chapter is that entitled "Diseases of the Conscience," in which it is pointed out that the blow to the patient's conscience involved in the gratification of instinctive urges may be in some cases a worse trauma than the repression of these urges.

This book, which is excellently translated, so that it is really pleasant to read, should be studied by all psychotherapists—not that they will all be wise in following the intuitive method, but because they will profit by the intelligent and restrained treatment of the subject.

Notes on Books

The work on heat stroke by Dr. L. Dérobert, which will appeal mainly to the physiologist and to a lesser degree to the pathologist and clinician, represents an experimental study undertaken by him at the Institute for the Study and Prevention of Occupational Diseases in Paris with the object of determining the pathogenesis of the disorders included under the name of heat stroke. Among the subjects treated in the book are thermogenesis in the muscles, brain, viscera, skin, skeleton, blood, and lymph, the general action of heat on the cell and the organism, the regulation of heat at rest and in activity, thermolysis as the result of chemical and physical mechanisms, the former consisting in a diminution in the excretion of CO_2 and the latter in evaporation of water by the skin and lungs. The disorders in the regulation of temperature are considered under the headings of artificial hyperthermia of cerebral, peripheral, or mixed origin, fever, heat stroke and the accessory syndromes of heat stroke, sunstroke, experimental heat stroke in dogs and rabbits, the naked-eye and microscopical lesion found in this condition, and the biological changes in heat stroke. An extensive international bibliography, in which Anglo-Saxon literature is well represented, is appended. *Les Troubles de la Thermorégulation (Coup de Chaleur)* is published by Masson et Cie, Paris, price 60 francs.

As the third edition of Dr. A. Piney's *Recent Advances in Haematology* appeared in 1931, and as the subject has in the interval undergone many changes, the fourth edition (Messrs. J. and A. Churchill; 15s.) is, as the author points out, practically a new book. It contains rather fewer pages, whereas the number of illustrations, including the coloured plates, has been doubled, those of the bone marrow deserving special attention. The author's conviction is that "the future of haematology would seem to lie in the hands of the laboratory workers, but there is still ground unbroken by the old-fashioned but trusty tools of the clinician."

The recently published *Proceedings of the Seventh Session of the International Office of Military Medicine and Pharmacy*, held at Bucarest in June, 1937, contains twelve articles contributed by medical officers of eight different nations (France, Turkey, Sweden, Rumania, Switzerland, the United States, Czecho-Slovakia, and Yugoslavia). The French text of each article is followed by a summary in English. The subjects discussed are recent improvements in French barracks, treatment of wounds, organization of the medical services in France and Sweden, the creation of hospital zones in war, the utilization of civil hospitals and V.A.D. by the Swiss A.M.S., the danger of typhus, the interrelationship of medicine, surgery, and dietetics in civil and military practice, psychology in the army, the dosage of drugs, anti-tuberculosis organization in the Yugoslav army, and appliances for the transport of the wounded in the French navy. The volume is published by the Office International de Documentation de Médecine Militaire, Liége, Belgium.

Thirty-two years ago a young French paediatrician wrote a summary of his special subject promising a future skill which has been amply fulfilled. Now, after a gap of thirteen years, during which numerous treatises and contributions to the medical press have freely appeared, Professor P. Nobécourt has found time to prepare a sixth edition of his *Précis de Médecine des Enfants* (Paris, Masson; 150 fr.). This volume, with over 600 illustrations, covers the field in an admirable manner. The author's well-known success as a lecturer has given him a facility for selection which is essential in a summary, and his graphic style gets over the common fault of many a synopsis, for the book is eminently readable. Since the fifth edition, which appeared in 1926, there have been many advances in paediatrics which are ably reflected in this new and completely revised version. Deficiency diseases, disorders of the blood, and virus disorders of the nervous system account for most of the new chapters, but, in addition, careful search shows that advances and discoveries in many other directions have been incorporated in existing sections. Those who have attended Professor Nobécourt's attractive clinical demonstrations will be grateful for this epitome of his views, and it is regretted that while praise can be freely given for every other aspect of this book it must be criticized in conclusion for the all too common fault among French medical publications—the absence of an index. For a book of over 1,300 pages this is an unpardonable blemish.

An Outline of Medical Psychology, by Dr. E. Fretson Skinner, is published by H. K. Lewis at 6s. The author sets out in this small volume to reduce the subject to its simplest terms for the benefit of the medical student. The first part is intended to introduce the student to the idea of psychology via his biological and physiological studies in very simple terms—perhaps unnecessarily simple, for most medical students could digest something a little more complex and therefore ultimately more helpful and illuminating. This initial physiological approach is suddenly abandoned never to be taken up again, for the second part is a very elementary and uninspired narrative of the Freudian doctrines of psychopathology. The third part is clinical, ending with general directions of no great clarity for treatment and the case histories of a few patients whose treatment is by no means fully carried out. This book is not likely to be very helpful to the student, but that may not be entirely the fault of the author, for the successful training of the psychotherapist will only be attained by his own often bitter experience with his patients, though this may, as the author says, be greatly helped by a personal analysis.

In the book entitled *Medical Treatment in General Practice*, which is based on the experience of ten years' teaching, Dr. D. R. Dhar, who holds several medical appointments in Calcutta, has provided a useful and up-to-date work of reference which will doubtless find a large circle of readers among practitioners and students in India. Special care has been taken to include Indian preparations in description of the diets which, according to Colonel R. N. Chopra in his foreword, are not mentioned in European or American textbooks. The value of the book has been increased by the treatment being preceded by a short account of the diagnosis and symptomatology of each disease. We have found an unusually large number of misprints in addition to those noted in the errata, especially in the names of authors and journals quoted in the footnotes, and in the prescriptions, the elements of which in many instances show a regrettable mixture of English and Latin. These, however, are comparatively trivial faults which should not detract from the general usefulness of the work. The book is published by D.M. Library, Calcutta, price 22s. 6d.

The Psychological Aspect of Delinquency (Baillière, Tindall and Cox; 2s. 6d.) is a series of six lectures given to the Bath and Bristol Mental Health Society under the chairmanship of Dr. ELIZABETH CASSON, who contributes a foreword. The only lecture worthy of note is that by Dr. J. R. Rees, which is directed to magistrates. He stresses the importance of diagnosis in all cases as a preliminary to treatment, though this treatment may take the form of punishment in or out of prison. The anti-social rebel may theoretically require psychotherapy, but may fail to benefit by it owing to his non-cooperation. The bizarre crime and that out of keeping with the character of the individual is almost always psychoneurotic in character and amenable to treatment. Dr. Rees urges the magistrate to hate the delinquent's anti-social act but not the delinquent himself.

Preparations and Appliances

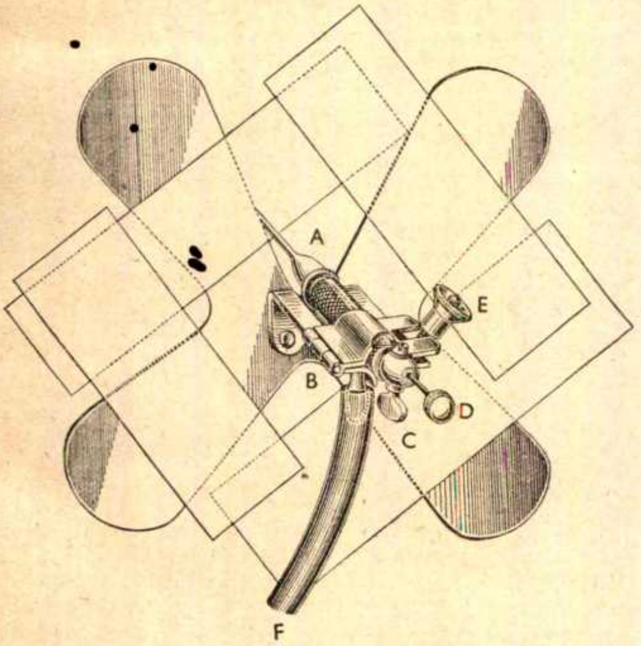
NEEDLE AND HOLDER FOR ARTIFICIAL PNEUMOTHORAX

Dr. DAVID A. HERD (Killingbeck Sanatorium, Leeds) writes:

In 1936 I devised a pneumothorax needle holder primarily for use in cases of spontaneous pneumothorax; it was also useful in cases of empyema. The benefits of that device were limited owing to the type of needles then employed, and to obviate their defects I have designed a different type of artificial pneumothorax needle and holder.

The holder consists of four pliable aluminium flanges which can be shaped and strapped to the chest wall with adhesive plaster. A grooved portion projects at right angles from the centre of these flanges and is provided with a hinged flap, B, and locking nut, E.

The needle differs from other types in having a long cylindrical barrel and lateral opening placed at right angles to the shaft, so that when placed in the groove its length can be adjusted in accordance with the thickness of the chest wall. Needles (A) of standard pattern can be fitted to this type of barrel. This needle can be used as an ordinary artificial pneumothorax needle or in conjunction with my holder. Tap C enables stylet D to be inserted and thus clear a blocked needle without disturbing the needle or patient.

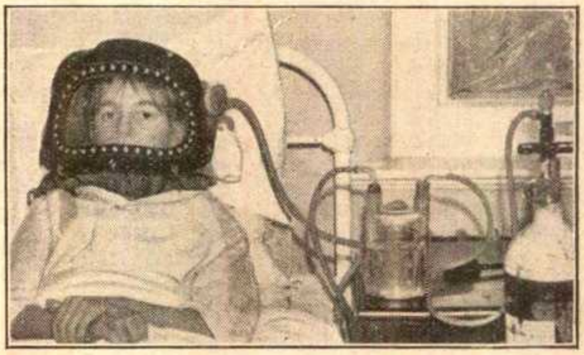


These instruments have been successfully used at the above sanatorium, and were made for me by Messrs. Charles F. Thackray, Ltd., Park Street, Leeds.

A SIMPLE OXYGEN TENT

Dr. W. HARTSTON, medical superintendent, Brumby Isolation Hospital, Scunthorpe, writes:

A simple and effective oxygen tent can be obtained at slight cost and with negligible trouble by conversion from a Government gas protective helmet. The tail piece and wire legs at the back of this helmet come away after removing the two retaining screws. The bellows and wide tubing above it are removed at the shoulder by unscrewing the metal band which fixes them to the port of air entry. Over this port is now stretched a square of rubber containing a metal nozzle—the nozzle of a car or bicycle inner tube with its surrounding rubber does admirably—and held in place by screwing on the metal band previously removed. The skirt of the bag is tucked round the patient inside his shirt or pyjamas. The apparatus is now ready for use, and can be connected to a Wolff's bottle or a flowmeter and ice chamber and the oxygen cylinder in the ordinary way. The improvised oxygen tent can be reconverted to its original purpose as a gas helmet in the same two minutes that it takes to prepare the more frequently required oxygen tent. The photograph is by A. H. Sanders, Scunthorpe.



VITAMIN E IN CAPSULES

Phytoferol capsules are a preparation of vitamin E (British Drug Houses Ltd.). Each capsule contains a quantity of a concentrate of vitamin E that is biologically equivalent to 3 mg. of *dl*-α-tocopherol. This latter substance was synthesized last year and forms a convenient standard for concentrates which contain the natural vitamin.

Messrs. B.D.H. have prepared a booklet in which they summarize the experimental and clinical evidence regarding the action of vitamin E. During the last few years several papers have recorded striking successes in the prevention of abortion by administration of vitamin E, and there is evidence that this may also check incipient toxaemia of pregnancy. Finally, the action of the vitamin on male impotence and undescended testicles is being investigated by American authors.

VITAMIN K THERAPY

Kapilon (Glaxo Laboratories Ltd.) is a preparation of a synthetic substance (2-methyl-1:4-naphthoquinone) which has an action similar to that of vitamin K. The latter is the chicken anti-haemorrhagic factor, the separate identity of which was only established a few years ago. Last year it was found that a simple naphthoquinone derivative produced the action of the vitamin, and the natural form is now believed to be a naphthoquinone derivative. The vitamin is fat-soluble, an important source being hog's liver fat. It is concerned with blood coagulation, and its chief measurable action is to reduce the bleeding time in cases of prothrombin deficiency. The use of this vitamin in obstructive jaundice was suggested in 1935. A paper by Macfie, Bacharach, and Chance (1939) describing its actions has recently appeared in this *Journal*.[1] The authors found that the intramuscular injection of the synthetic product was of striking value in the prevention and treatment of haemorrhage in jaundice.

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[1] Macfie, J. M., Bacharach, A. L., and Chance, M. R. A. *British Medical Journal*, December 23, 1939. The Vitamin K Activity of 2-Methyl-1:4-naphthoquinone.

Nova et Vetera

Dr. WILLIAM BEAUMONT

Life and Letters of Dr. William Beaumont originally appeared in 1912 on the occasion of the centenary of Beaumont's entry into the practice of medicine, for on June 9, 1812, he was granted a licence to practise physic and surgery by the Third Medical Society of the State of Vermont, as by law established. Sir William Osler twenty-seven years ago welcomed this full account of the pioneer-physiologist of the United States. This introduction has wisely been reproduced in the new edition,[1] and is now accompanied by a present-day appreciation of Beaumont's experimental work from Professor Andrew Conway Ivy, and goes on to record that at the meeting of the International Congress of Physiologists in Boston in 1929 each guest was presented with a medallion bearing the likeness of Beaumont and a facsimile of the original edition of his book. Then "William Beaumont, the frontier physician and physiologist, on this occasion, was figuratively canonized as the patron saint of American physiology." Another addition to the book in its new form is a double-page coloured plate showing Beaumont in military costume collecting gastric juice from the gastric fistula of Alexis St. Martin. This is reproduced from the painting in oil by Dean Cornwall, A.N.A., 1928, in the possession of Messrs. John Wyeth and Brother of Philadelphia. The text of the *Life and Letters* remains as in the original, and, as Professor Ivy remarks, "One truly does not know gastric physiology and pathology as one should until Beaumont has been read critically and *in toto*."

PIONEER ABDOMINAL SURGEONS

Annual orations and introductory addresses usually come under the heading of ephemeral literature, for they have served their purpose when once they have been delivered. The Bolingbroke Lecture given by Mr. Zachary Cope before the South-West London Medical Society in May, 1938, is an exception to the rule. It now appears in an extended form under the title *Pioneers in Acute Abdominal Surgery*.[2] The acute conditions are volvulus, intussusception, strangulation by a band, peritonitis associated with perforation of the stomach or bowel, and obstruction of the large intestine caused by stricture. The operative treatment of these conditions lies within the memory of those still living, though a few were undertaken in pre-anaesthetic days. The pioneers were driven to operate in sheer desperation when every other means of relief had failed. It is difficult to decide whether in the beginning the courage of the surgeon or the heroism of the patient is the more to be admired, but Mr. Cope shows how much both the surgeon and the patient have to be thankful for owing to modern advances. He tells, for instance, of the French wine merchant in 1776 who, with a stricture of the large intestine, was advised, laxatives having failed, to swallow two pounds of quicksilver in the hope that the weight of the metal might overcome the obstruction. A month later Pillore of Rouen made the first recorded artificial anus and the patient survived for twenty-eight days. The mercury was found at the necropsy lying unchanged in the last convolution of the jejunum. But this was nothing to the treatment which a patient might have to undergo before an operation was thought to be imperative. There was a stout-hearted lady of 64 in the year 1820 to whom—

> "All the medical resources of art were exhausted in fruitless attempts to procure evacuations. Salts, senna, aloes, colocynth, jalap, scammony, gamboge, elaterium, calomel were given in their largest doses and variously combined: castor oil was also administered in doses of three ounces; and as vomiting was by no means frequent these medicines were commonly retained. Injections of every sort and by different means were also administered. It was attempted to pass a flexible catheter beyond the obstruction through which clysters might be thrown into the bowel above the seat of it. She was once bled without any relief to her symptoms, and when all other means had failed some large doses of laudanum were given on the supposed possibility of the existence of spasm. Finally the surgeon made an opening into the colon in the left iliac region, and after a stormy convalescence the patient recovered. The surgeon when reporting the case adds complacently the operation has afforded her a moral as well as a physical advantage. She is now at no loss for an interest, and is provided with something to think of for the rest of her life."

This extract shows that Mr. Cope has provided a readable as well as a useful little book. He has gone to original sources for his information and has been at great pains to find portraits of the pioneers, from J. L. Petit in the eighteenth and F. T. Paul of Liverpool in the twentieth century. The portraits are well reproduced by the publishers. The sources of information are indicated and it is thus easy to trace the beginning of any of the operations mentioned. There is an index of names and another of subjects.

THE NATIONAL HEART HOSPITAL

A Multifarious Founder

The early history of the National Hospital for Diseases of the Heart, which was founded in 1857, the year of the Indian Mutiny, shared the disturbed atmosphere of its birth. As Captain Robert Whitney says in his pamphlet "The Place of Hearts" (obtainable from the hospital, Westmoreland Street, W.1, price 2s.), the pious founders of long-established hospitals are not likely to be embarrassed by records of their past, but the story of the adventurer, Dr. Eldridge Spratt, who combined in his own person the offices of founder, medical staff, treasurer, chairman, and secretary, was far otherwise. This Gilbertian arrangement worked with perfect harmony and admirable speed so long as decisions alone were needed for ordering equipment, drugs, and food; but it appeared in another light when demands for payment reaching Dr. Eldridge Spratt, the physician, were passed on to Mr. Eldridge Spratt, the secretary, for settlement. A committee was set up by the founder and the times became stormy, resignations were frequent, and on occasions the founder only was present at the meetings; he had many schemes for raising money, and acted on the principle that charity begins at home. On the night of January 18, 1875, he broke burglariously into the hospital and carried off instruments, furniture, pictures, books, and a large quantity of lead in a removal van, and some of the spoil was never recovered. For the first three years the hospital "staff" did not overwork himself, for the average daily attendance of patients was a little more than one; but in 1871 the medical staff was doubled by the appointment of Dr. David Leslie as physician.

The hospital began at 67, Margaret Street, Marylebone, then moved to Newman Street, and in 1874 came to more or less rest at 32, Soho Square for forty years till January, 1914, when the present hospital was opened on the site of St. James's, Westmoreland Street, the church to which large congregations were drawn by the Rev. H. R. Haweis, an original and somewhat unconventional preacher, who rivalled the Rev. Page Roberts of Vere Street in attracting the medical inhabitants around Cavendish Square. Haweis had in 1868 been appointed chaplain to the hospital, but resigned in a month "as a result of various rumours connected with the hospital and also appertaining to Dr. Spratt's private character." Since 1914 the hospital has attained such a high position that it can afford to smile at the frailties of its founder.

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[1] *Life and Letters of Dr. William Beaumont*. By Jesse S. Myer, M.D. Introduction by Sir William Osler, Bt., M.D., F.R.S. (Pp. 327; illustrated. 21s. net.) London: Henry Kimpton. 1939.

[2] *Pioneers in Acute Abdominal Surgery*. By Zachary Cope, M.D., M.S., F.R.C.S. (Pp. 135; illustrated. 7s. 6d. net.) London: Oxford University Press. 1939.

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RESULTS OF TREATMENT OF GASTRIC CANCER

It is accepted that about one-third of malignant tumours are situated in the stomach, and that surgical excision is at present the only known means of cure for cancer in this site. Any study of end-results in the treatment of gastric cancer thus resolves itself into an analysis of surgical methods and results. Since the experience of any individual surgeon or even a group of surgeons in one hospital is both limited on account of numbers and dependent on the skill and technical ability of the surgeon, his assistants, and the radiologist who contributes to the diagnosis, a wider field is necessary for statistical purposes. Livingston and Pack, two New York surgeons, have brought together for review the great body of data published in the last sixty years, comprising nearly one thousand publications, and have submitted them to critical study and analysis. Their results covering reports of 14,000 gastrectomies for cancer are now available.[1] Billroth in 1881 successfully removed an advanced colloid carcinoma from the stomach by a procedure to be classed as a subtotal gastrectomy, but in the first five partial gastrectomies for cancer one patient alone survived, and that only for four and a half months. Billroth later expressed dismay at the high general mortality and gave it as his opinion that not more than one in two hundred cases showed conditions suitable for an attempt at resection, though later he raised his estimate as to operability to one in fifty or sixty. Since that time it is possible to trace a gradual evolution of improvement in results, and recent articles in this country and elsewhere on the subject of gastric cancer cures set entirely new standards of attainment. Reports have been published of 20 per cent. ten-year cures among all patients leaving the hospital after gastrectomy for cancer. About one-third of immediate survivors of gastric resection for cancer are alive at the end of three years, one-fourth are living at five years, and one-fifth live beyond ten years from the date of discharge from hospital. Since steady and progressive advances have been made during the six decades since the first gastrectomy for cancer, it is reasonable to believe that the limits of attainment in the surgical management of resectable gastric cancer have not yet been reached; certainly recent progress has exceeded that of any previous period of surgical activity. The experience of one of our own surgeons (whose results are included in Livingston and Pack's series) may be cited. Sir James Walton[2] found over a thirty-five-year period that the operability rate has increased from 28 per cent. at the time of the last war to 44 per cent. in the years 1928–35. Radical operation was possible in 224 of his 572 cases seen—over one-third of the total number.[3]

In gauging the end-results much confusion has arisen from failure to distinguish between resectable gastric cancer and surgically incurable gastric cancer. From two-thirds to three-fourths of gastric cancers are unresectable when first seen, while at no time in surgical history and at no point in the world have the definitive cures of gastric cancer ever exceeded 5 per cent. of the total number of patients with the disease. At present, therefore, 95 per cent. or more of all afflicted die of the disease within less than two years. We have thus to envisage a disease within a disease, the total number of patients having cancer of the stomach as distinguished from the resectable fraction of this total. This resectable gastric cancer as a separate entity is still one of the most common forms of cancer and is highly amenable to surgical therapy, which offers a distinctly favourable outlook for definitive cure. Livingston and Pack point out that it is wrong to allow the outlook for the disease as a whole to dominate the picture. To state that a patient with a resectable gastric cancer has but a 1 to 5 per cent. chance for a long-term survival when in reality this is a 20 to 50 per cent. chance of cure is a serious error.

Further analysis shows that the attained cures are represented by the total cases, less those found to be inoperable, less those that are unresectable, less those that do not survive resection, less again the natural rate of decline among immediate resection survivors. A large part of the loss of numbers in survivors after discharge from hospital after resection is due to deaths from natural causes, which are high for the age group associated with gastric cancer. The number and size of each of the "loss factors" preclude both now and for the future the attainment of large percentages of long-term cures among all patients seen. But for resectable gastric cancer the situation is relatively simpler; cures are resections performed, less the resection mortality, less again the natural rate of post-resection decline in survivors. The resectable patient has thus but two hazards: the resection risk and the post-resection death rate from recurrence or natural death. The former hazard is under surgical control, while the latter rests largely in the hands of Nature and can be but little affected. The training of surgeons and surgical teams to work under optimal conditions is necessary and attainable. But in order to obtain a small number of long-term cures operations in large number are a necessity. Further, the operability rate proves of greater significance than the rate of resection mortality. This is seen from the fact that a 50 per cent. loss from inoperability means a loss of half the patients from all possibility of cure, while a 50 per cent. loss from resection mortality will mean but numerically few patients of the total number with the disease.

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[1] *End-results in the Treatment of Gastric Cancer: An Analytical Study and Statistical Survey of 60 Years of Surgical Treatment.* By Edward M. Livingston, M.D., and George T. Pack, M.D., F.A.C.S. London and New York: Paul B. Hoeber. (3 dollars.)

[2] Walton, James, *Medical Society's Transactions*, 1936, 59. 182.

[3] Idem, *British Medical Journal*, December 9, 1939, p. 1127.

The problem for the community, then, is the finding of resectable gastric cancers. They are numerically common, for necropsies reveal that even at the time of death from gastric cancer approximately one-fourth of these tumours are still confined to the stomach or to the stomach and immediately adjacent lymph nodes; and as Sir James Walton has found, resection is possible in more than one patient in every three. All patients with the disease, except those unequivocably proved to be unresectable, should be surgically observed and a large percentage surgically explored. Resectability or unresectability is often ascertained with complete certainty only through surgical exploration. But the role of the medical practitioner in bringing the patients early to investigation of equivocal symptoms in those of cancer age may equal in importance the role of the skilled surgeon. Unless after full investigation growth can be definitely excluded an operation should be considered.

INDIAN HEMP AGAIN

Professor Robert P. Walton of the University of Mississippi has produced a timely and elaborate monograph on "America's new drug problem."[1] The hemp plant, *Cannabis sativa*, utilized from time immemorial for the manufacture of fibre and rope, from which for a thousand years in the Orient a narcotic has been extracted and largely used, has within the last two decades provided an anxious problem in the Occident. It was omitted from the *British Pharmacopoeia* of 1932. Professor Walton discusses the history of Indian hemp, its use and abuse, the pharmacology and therapeutics of the drug derived from it, the growth and extension of the "hashish vice," and more especially the modern development in Western countries of the habit of smoking "marihuana" cigarettes. The acute and chronic effects on mind and body of the ingestion of the drug are given and its pharmaceutical and chemical qualities studied. The work receives commendation in a foreword by Professor Geiling of the University of Chicago for its value to the psychiatrist, the criminologist, and the sociologist as an authoritative account of a drug "which already has a long and dishonourable history and now is again engaging attention as the result of an increasing addiction to its use in modern civilized countries."

The use of cannabis as a narcotic under the names of bhang, ganja, charas, or ma can be traced back in parts of Asia to A.D. 950, though doubtful references have been traced in Homer, the Old Testament, and Pliny. Its euphoric properties—mental exaltation, and consequent oblivion to miserable surroundings—led to its widespread acceptance, either by smoking or oral ingestion of the crude flowering tops or their contained resin. The ascription of the word "assassin" to addicts of hashish by DeSacy is disputed by other philologists. Writers like Dumas (in his *Count of Monte Cristo*) and Baudelaire (from his own experience) invested hashish addiction with literary glamour. Gautier, from his adventures in the Quartier Latin with his colleagues, graphically described the hallucinations of time and space, the beatitude and hilarity which hashish intoxication provided "as a synthetic escape from bourgeois environment." It seems that the social evils resulting from the "hashish vice" attracted little attention before the nineteenth century. It is related that Napoleon's generals, following the Egyptian expedition, made abortive efforts to eradicate the evil. It was not until 1840 that the use of cannabis therapeutically was recognized in Europe, and until 1910 that its non-medical use began to spread elsewhere than in the Orient. In Mexico, where the hemp grows wild, it is related that the drug was eaten, drunk, and smoked at the close of last century. It is, however, since 1910 that the smoking of hashish in the form of marihuana cigarettes has attracted attention in the State of New Orleans. The habit spread like wildfire. Thousands of kilogrammes of the "weed" were imported annually. An international group of dealers acted as a distributing centre and reaped large fortunes. The trade extended northwards, followed by a "crime wave." State after State succumbed to the traffic. Cabarets and night clubs and the underworld became ready purchasers of the drug and peddlers invaded the schools selling marihuana cigarettes to children. From 1927 until the present year legislative measures have been adopted in State after State with a view to suppressing the evil by confiscating "the weed" and punishing traffic in it by fine and imprisonment. In New York in 1934 there were 300 convictions for violation of the Marihuana Law, and 170 tons of the cannabis plant were seized in 1935. In Harlem there are said to be hundreds of dens where marihuana is smoked. Since 1931 the traffic has invaded Canada; cigarettes reached Montreal from New York and shipments of hemp were arriving from the West Indies and West Africa. Ottawa and Toronto claimed their addicts and the use of marihuana is said to be very popular on the Pacific coast.

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[1] *Marihuana: America's New Drug Problem. A Sociologic Question with its Basic Explanation Dependent on Biologic and Medical Principles.* By Robert P. Walton. J. B. Lippincott. (12s. 6d.)

It was largely on representations from Egypt and South Africa that Indian hemp and its galenical preparations were brought under national and international control. Although hints were made that these should be included in the Hague Opium Convention of 1912, it was not until the Geneva Convention of 1925 that this was given effect. In Egypt, Russell Pasha has waged vigilant warfare against hashish; of 500 kilos seized in 1937, more than 400 were imported from abroad through Port Said, Alexandria, or Suez, and Russell has warned against any relaxation of control. Professor Walton's monograph is an opportune addition to the information needed for the international campaign against narcotic addiction, more especially in its most modern and insidious form of marihuana.

Colonel R. N. Chopra, M.D., and Captain G. S. Chopra, M.B., have recently contributed to the *Indian Medical Research Memoirs*[2] an exhaustive research on the present position of hemp-drug addiction in India. The history of the cultivation of hemp and the distribution and control of its production are related. The social and religious associations of its use and its employment for euphoric and aphrodisiac purposes are discussed. As the result of an analytical study of 1,238 addicts to hemp the authors conclude that while small occasional uses of the drug may do little harm continued and excessive indulgence leads to general debility, premature decay, mental derangement, and is, in some cases, conducive to crime.

AXILLARY THROMBOSIS

No doubt in large measure because of the work of Leriche and his co-workers at Strasbourg, French medical literature suffers from no lack of contributions on vascular surgery. E. Roelsen[3] of Copenhagen has recorded in the *Lyon Chirurgical* seven cases of so-called primary subclavian or axillary venous thrombosis from the university clinics of Copenhagen, and discusses the cause, clinical features, and treatment. Sir James Paget[4] in 1875 appears to have been one of the first to describe the condition, but he regarded it as of gouty origin. Von Schrotter[5] was the first to describe the post-traumatic variety. The majority of cases appear to be of this nature, and, as one might expect, the right subclavian or axillary vein in young or middle-aged men is most often involved. Cases are met with, however, in which no preceding muscular strain could be held responsible, and which, therefore, in contrast with the post-traumatic ones, might be described as spontaneous. One such case was recorded by J. C. Ross[6] in 1933 of a man aged 27 who awoke one morning to find the condition fully developed. There is usually a history of muscle strain, such as might be caused by using a screwdriver with the arm in an awkward position; swelling of the arm occurs; the superficial veins are distended; and the axillary vein may be palpable as a tender cord. There are no pyrexia, no constitutional effects, and no demonstrable changes in the blood. The Wassermann reaction is negative. Roelsen advisedly uses the expression "so-called thrombosis" of the subclavian and axillary veins, because in twelve of the reported cases the vein was found to be thrombosed but in nine others it was free from clot, while fascial investing filaments were found adherent to the surface of the vein. A number of cases have been operated on, though most are found to clear up if the arm is put at rest in abduction for a week or longer. Roelsen illustrates his paper with some infra-red photographs which show well the relatively greater superficial venous network on the side of the lesion. Numerous theories of causation have been suggested. Roelsen favours Cottalorda's view that there is primarily venous spasm following some form of stimulus applied to the perivenous sympathetic nerve net, and when thrombosis is present this is secondary to the venous spasm. It is suggested that if resolution does not soon follow the placing of the part at rest the vein should be exposed, freed from its adherent fascial coverings, and stripped of its nerve net (perivenous sympathectomy); and that if this is not effective a segment of the vein should be excised. It is perhaps rather early to assess the value of these operations. Good results have been claimed for them, but probably most British surgeons would not resort to them until after a prolonged trial of conservative measures, and, indeed, the condition usually responds so well to rest and abduction that any more active treatment should only very rarely be necessary.

HYPOTHALAMIC LESIONS IN PEPTIC ULCER

The work of Dodds and co-workers,[7] showing that injection of extracts of posterior pituitary may lead to acute ulceration of stomach and duodenum, has recently been continued by Nedzel,[8] who reports the results of injecting sixty-two dogs with 20 pressor units of pitressin per 5 kg. of body weight twice a week over a period up to six months. Twenty-three of these animals had lesions of the stomach and duodenum ranging from a small injury to a large ulcer. These lesions were most easily produced in March, April, and May, and Nedzel suggests that this may bear some relation to the frequent clinical complaint by ulcer patients that cold or changeable weather precipitates the onset or return of symptoms. Nedzel's findings lend weight to the present tendency to modify Virchow's vascular theory of ulceration by invoking functional spasm of mucosal vessels and auto-digestion. In a review of the acute gastric disturbances and lesions following hypothalamic stimulation, the subject of a Hunterian Lecture by Heslop in 1938,[9] Vonderahe[10] describes pathological changes of a haemorrhagic nature in the diencephalon and medulla in fourteen patients who died from acute complications of peptic ulcer. The haemorrhages were in the anterior hypothalamus at the level of the hypothalamic sulcus, involving the grey matter of that area and of the superior paraventricular nuclei; lower down similar changes were seen in the dorsal motor nucleus of the medulla. Adjacent areas with the same blood supply were unaffected. In a control series of thirty-five brains no such haemorrhages were found in thirteen, whereas in the others haemorrhages were particularly marked in persons dead from irritative lesions of the abdominal viscera and in some cases of diabetes mellitus. In these control investigations, however, the pattern of distribution of the haemorrhages differed from that found in peptic ulcer. Vonderahe suggests that strong afferent stimulation from visceral areas may lead in the end to irreversible organic changes in the nervous system, and suggests that "many of the sequelae following recovery from a severe attack of peptic ulcer—the irritable pulse rate, the increased sweating, the signs of 'sympathetic imbalance'—all point to injury in the parasympathetic centres of the dorsal motor nucleus of the vagus nerve, while quick fatigability, irritability, emotional changes, and alterations in regulation of metabolism, sleep, and temperature indicate injury to the thalamus and hypothalamus. To say that such manifestations are merely neurotic is frequently untrue, and injustice may be done by not recognizing an organic handicap." While agreeing that his findings may represent a contribution to our uncertain understanding of the pain of ulcer, clinicians will probably join issue with him in his conclusion, quoted above, on the ground that the "sympathetic imbalance" of ulcer patients, for the most part, long antedates the ulcer, and is related to the pre-existing "diatheses" described by Hurst and to the psychological characteristics noted by Davies and Wilson and others. The acute abdominal complications of peptic ulcer are also perhaps more notable for the subsequent —unfortunately often temporary—improvement of the patient rather than the reverse. Vonderahe's interesting findings may perhaps be related by future investigation to Sir Henry Head's[11] observation of areas of "referred" hyperaesthesia of the skull in patients with severe visceral disease.

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[2] July, 1939. Calcutta: Thacker, Spink and Co. Rs. 4 or 5s. 4d.

[3] *Lyon. chir.*, 1939, **36**, 4:385.

[4] *Clinical Lectures and Essays*, 1875, 306, London.

[5] Quoted by Cadenat, *Paris méd.*, 1920, **10**, 253.

[6] *British Medical Journal*, 1933, **2**, 525.

[7] *Lancet*, 1934, **2**, 918; and 1935, **1**, 1099.

[8] *Arch. Pathol.*, 1939, **26**, 988.

[9] *Brit. J. Surg.*, 1938, **25**, 884.

[10] *Arch. Neurol. Psychiat.*, Chicago, 1939, **41**, 871.

EXPERIMENTAL ULCERATIVE COLITIS

Drury and Florey were the first to graft portions of the colon of animals into the skin so that the mucous membrane was exteriorized, and they have published observations on the vascular reactions. The mucous membrane of these grafts is easily susceptible to surface irritation. Normally there is a mucous covering, and, with careful dressing to protect this, the mucous membrane of grafts which have been on the surface of the skin for many months may present microscopical appearances identical with those of the healthy bowel wall. Prolonged exposure of the grafts to the ordinary friction of everyday life gave rise to inflammatory changes, which, however, were healed readily with careful attention. After a dressing is placed on the surface some mucus is formed, and this apparently protects the mucous membrane from further irritation. Irritation is not the sole stimulus to secretion of mucus, since isolated loops of colon produce more mucus when cathartics are given, which affect the remainder of the colon. Lium,[1] in some observations on the processes of inflammation and healing in colonic grafts, noted that chronic surface irritation caused by leaving the grafts without dressings for forty-eight hours led to muscular spasm and an initial copious outpouring of mucus, which was followed by a more watery secretion when the goblet cells were exhausted of mucus. Muscular contractions induced in the graft —by rubbing, by applying acetylcholine after intravenous injection of prostigmin, or by intravenous injection of Shiga dysentery toxin, the action of which is to produce violent spasm of the bowel muscle—resulted in oedema, petechial haemorrhages, and superficial ulceration of the mucous membrane of the graft. These changes were not due to local alteration of the circulation through the graft—that is, to ischaemia alone—unless accompanied by muscular contraction. The author suggests that spasm may be a prime factor in the causation of ulcerative colitis. Ulceration is found to occur in the colon proximal to an obstructive lesion; below the obstruction the mucous membrane is normal. Ulcerative colitis may be conceived as a specific reaction to a number of influences which can initiate spasm of the colonic musculature. These include possible over-activity of the parasympathetic nervous system, infections such as dysentery, and vitamin deficiency. Once the colon becomes spastic it is potentially an organ that can produce severe damage to its own surface structures, for the exhaustion of mucus-secretion together with nutritional deficiency may delay the healing processes. The author's experimental findings would conform with those arrived at clinically by von Bergmann—namely, that in the evolution of ulcerative colitis a sequence can be traced from spastic colon and mucomembranous colitis before ulceration occurs. Though suggestive, these observations of Lium need confirmation.

DENTAL FLUOROSIS

For some years attention has been directed to a dental disease, characterized by a mottling of the enamel of the teeth, which has been traced to the presence of an appreciable quantity of fluorine in the drinking water. This has been seen particularly in certain regions in the neighbourhood of the Rocky Mountains, U.S.A., but it has also been observed in Africa, Australia, Argentine, Canada, Italy, and, nearer home, at Maldon in Essex. The effect of minute quantities of fluorine (one part per million) in domestic water has already been commented upon in these columns,[2] and observations have been published recently[3] on the existence of dental fluorosis in England, Australia (Queensland), and the United States. The first sign of the disease is the formation of a brownish substance, usually on the labial side of the front teeth, taking the place of a deficient deposit of enamel. The result is that the teeth appear irregularly pitted with shallow cavities more or less filled with food debris. Not all the teeth are affected, and the condition is often confined to those at first attacked. In the Rocky Mountains region, where the subject has been closely investigated, only those children were found to be affected who were born in the district where fluorides were present in the water supply or who lived in that district during the period of enamel formation. No further cases occurred after a change over to a fluoride-free water supply. Ainsworth[4] observed dental fluorosis in a certain number of school children (aged 5 to 15 years) at Maldon, noting that their dentures were, generally speaking, good and less carious than was usual among council school children. It was found histologically that the pitting was due to loss of enamel and not to deficient formation, and that in areas where fluorosis was endemic the potable water contained approximately 5 parts per million of fluorides as against a tenth of that quantity in other areas. Bowes and Murray[5] have also published a report on the "mottled teeth" at Maldon, in which they discuss the quantitative composition of fluoritic teeth in the human subject and in experimental animals. They suggest that the pasty whiteness of such teeth is the result of deficiency of iron in their composition. Dean[3] states that among school children living in districts in the United States where fluorosis is endemic there is less dental caries than in districts where domestic water supplies are relatively free from fluoride; he suggests that dental caries may, to some extent, be controlled by the nature of the potable water supply. Fluorosis identical in all respects with that seen elsewhere has been observed by F. W. Clements[3] in a number of districts in the interior of Queensland (Australia). The regions concerned are those where the main water supply is derived from deep bores (3,000 feet) and contains from 1.6 to 3 parts per million of fluoride. In other areas the water supply is from surface wells or the river, and in these the children are free from the disease.

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[11] *Brain*, 1893, **16**, 1 (and subsequent papers).

[1] *Arch. intern. Med.*, 1939, **63**, 201, 210.

[2] *British Medical Journal*, 1939, **1**, 1907.

[3] *Bull. Off. int. Hyg. publ.*, 1939, **31**, 855, 862, 866.

THE SITE OF ANTIBODY FORMATION

The much-debated question of where antibodies are formed is only part of the larger problem of the source of serum proteins generally. To attribute this function to the liver, an organ already, it would seem, overburdened with multifarious supposed activities, is easy but unconvincing, and now known to be incorrect to the extent that other tissues are certainly involved as well. All of these tissues, the liver included, contain reticulo-endothelial cells, and it is a reasonable hypothesis that these cells form the globulins of which antibodies consist, if not others as well. This idea was indeed current before certain evidence now available existed to support it, since it was well known that these cells phagocytosed bacteria and other antigens, and the specific antibody to which these gave rise could only be supposed to be formed at the site of their destruction. To have brought this process under direct visual observation, confirming its reality and to some extent following its intimate mechanism, is the claim now made by Florence Sabin.[1] This achievement was made possible by the use of a "marked antigen"—that is, an antigenic substance the particles of which are recognizable microscopically in the tissues. The substance used was the alum precipitate from an azo-dye—egg-albumen compound synthesized previously by Heidelberger and Kendall for the quantitative study of antigen–antibody reaction by means of colorimetry. Suspensions of this compound were injected into rabbits by various routes, and it could then be identified easily in the cytoplasm of phagocytic cells of the reticulo-endothelial system, the situation of these cells naturally depending on the route of the injection. Two essential facts emerge from the numerous details of a study of the subsequent behaviour of these cells. One is that the disappearance of the dye-protein from them after apparent digestion in a vacuole coincides with the appearance of antibody in the circulating blood. The second is that at this stage there is a profuse detachment of fragments from the surface of these cells. This shedding of "surface films" is a function of the normal macrophage, and its observation was what led Ranvier to give to these cells the name "clasmatocyte." Sabin concludes that this is the mechanism by which these cells liberate globulins, and adduces a further argument from embryological data which supports the same conclusion. The normal process of globulin formation by reticulo-endothelial cells is thus accelerated and qualitatively altered by the phagocytosis of an antigen. Sabin goes so far in final conclusion from these observations as to define an antigen as "a substance which can specifically modify the synthesis of the cytoplasm of the cells of the reticulo-endothelial system." This is a far-reaching and most important conclusion, which one would hesitate to accept in full from any less experienced observer, since, although the serological data concerned are exact enough, the rate of disappearance of particles from cells in living tissue is scarcely amenable to quantitative statement, and it is on the correlation of these two kinds of observation that the conclusion depends. It nevertheless bears the stamp of truth and accords well with all other knowledge of the subject. That an important constituent of the blood is formed by the disintegration of shed particles of cell cytoplasm rather than by expulsion from cells in an already dispersed form is a novel idea, and it naturally raises the questions whether other serum proteins are formed in the same way, and whether a similar mechanism takes part in other syntheses in the body.

The Minister of Health and the Secretary of State for Scotland, have jointly appointed Dr. Edward Ellice Henderson, a medical officer of the Ministry of Health, to undertake the duties of Inspector of Anatomy in England, Scotland, and Wales.

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[4] *British dental J.*, 1933, **55**, 233.

[5] Ibid., 1936, **60**, 556.

[1] *J. exp. Med.*, 1939, **70**, 67.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

FRACTURES ROUND THE ANKLE-JOINT

BY

ERIC I. LLOYD, M.B., B.Ch., F.R.C.S.

Fractures round the ankle-joint are among the commonest of lower limb injuries, and their treatment is a matter of such overwhelming importance that every doctor should know as much as possible about it, so that he can either decide to treat these cases—with a full knowledge of his responsibility—or get such specialized assistance as circumstances permit. These fractures used to be treated in bed on a splint for six weeks with the minimum of reduction and the maximum of rest. Everyone now knows that a "walking plaster" is the proper thing, but the urgent necessity for obtaining and keeping exact reduction is less generally realized. There are still occasions when a patient's future is irreparably blighted by a good plaster worn for six or eight weeks on a very ill-reduced fracture. It is unfortunate that a patient in plaster can often bear weight with comfort on a fracture which is not in good position.

Classification

Pott's fracture was a term originally applied to fracture-dislocations of the ankle in which the foot was displaced outwards upon the leg. The advent of *x* rays has permitted more exact diagnosis and encouraged division of ankle-joint fractures into groups which were not recognized by Pott (1714–89). Ashurst's classification (1922) divides ankle-joint fractures, according to their method of production, into external rotation (61 per cent.), abduction (21 per cent.), and adduction (13 per cent.) fractures, the remaining 5 per cent., which include compression fractures, being atypical forms. Fig. 1 shows this diagrammatically, and it may be noticed that first-degree fractures involve structures on one side of the joint only, whereas both sides are involved in those of the second degree. It also shows that when both bones are broken the line of fracture of the first break to occur is oblique in torsion fractures and transverse in abduction and adduction fractures.

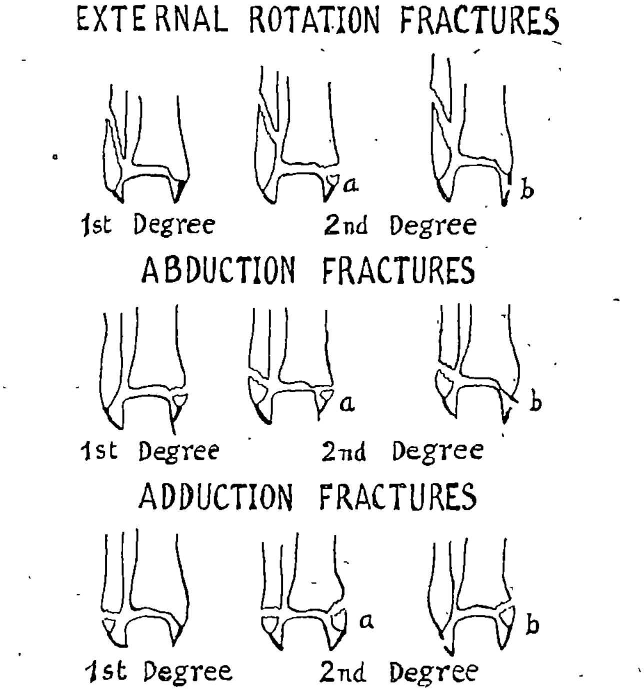

FIG. 1.—Ashurst's classification of ankle-joint fractures (after W. G. Campbell).

Minor Fractures

Campbell (1938) has recently demonstrated that first-degree ("minor") fractures can be safely treated with a local anaesthetic and that immediate weight-bearing without plaster can then be allowed. It must be remembered, however, that some first- and second-degree fractures look identical on the radiograph, though there is risk of displacement in the second group and not in the first. Obviously it would be dangerous to treat second-degree fractures without plaster, and it is important to distinguish them at once by pushing the foot laterally or medially towards whichever bone is seen on the radiograph to be fractured. This is painful only when the astragalus presses against the broken bone, which does not occur if the ligament on the opposite side of the joint is intact. There is no necessity to test the ligament when the radiograph shows that both bones are broken, because the fracture is then obviously not first-degree. The test consists in a purely lateral movement of the foot on the leg, and is vitiated if a rotatory movement is accidentally added (Roberts, 1938). The important distinction between minor and major fractures depends, therefore, first on a radiological and secondly on a clinical examination, in that order.

Treatment (Campbell, 1938).—One side of the foot only is damaged in minor fractures, and the resulting haematoma is entered by a Record needle after anaesthetizing the skin. Ten to twenty c.cm. of 2 per cent. procaine or novocain is injected; this should relieve the pain completely and allow weight-bearing within a few minutes. The patient walks without splint or plaster and attends daily for the next two or three days, but the injection is repeated only if pain recurs. Radiographs may be taken after the first two days and subsequently at intervals of a week until consolidation is seen to have occurred, when no further treatment is necessary. In the fracture clinic of the Royal Northern Hospital it has been found possible to ignore many of these fractures and to dispense even with a local anaesthetic.

Major Fractures

Both sides of the joint are damaged in this group (that is, either both bones or a bone and a ligament) and displacement has already occurred or is liable to do so. Bone injury is seen on the radiograph and a torn ligament is diagnosed by the clinical test (Roberts) described above, which is, of course, only necessary when the injury is bony on one side of the joint and ligamentous on the other. A further deformity (not shown in Fig. 1) sometimes occurs in rotation fractures when the force continues to act until the astragalus breaks off a wedge-shaped piece from the back of the tibia, and the foot may then be displaced backwards as well as outwards. A similar fragment occasionally breaks off from the front of the tibia, but this is generally due to a hyperextension mechanism, which is unusual. The fracture is called third-degree

(Ashurst) if the whole lower end of the tibia is fractured in addition to the primary deformities.

Anaesthesia.—Local anaesthesia may be used, but it is not always satisfactory even in recent cases. The skin is painted with iodine and anaesthetized and a Record needle passed into the haematoma and into the ankle-joint. Ten to twenty c.cm. of 2 per cent. procaine or novocain is injected, and the same procedure is repeated on the opposite side of the limb. A general anaesthetic is, however, usually preferable, and gas and oxygen after preliminary morphine 1/6 grain, or omnopon 1/3 to 2/3 grain with scopolamine 1/150 grain, given hypodermically, is satisfactory.

Treatment of Major Fractures

If there is damage on both sides of the joint but no displacement the limb is put in plaster without either anaesthetic or manipulation. Displacement, however, is more common, and necessitates both anaesthesia and manipulation, preferably under radiological control.

OPERATION

The patient is in the dorsal position with the affected limb hanging over the end of the table and the knee bent at a right angle to relax the tendo Achillis. The surgeon sits on a low stool at the end of the table with the patient's foot on his knee and the most recent radiographs in full view. A felt strip a quarter of an inch thick and three and a half inches wide is stitched round the upper third of the leg (Fig. 2) and, the proper length for two plaster slabs is then measured with a gauze bandage or tape. The first slab will run like an elongated stirrup down each side of the leg and across the heel, and the second will pass from the middle of the felt strip round the back of the heel to the tips of the toes.

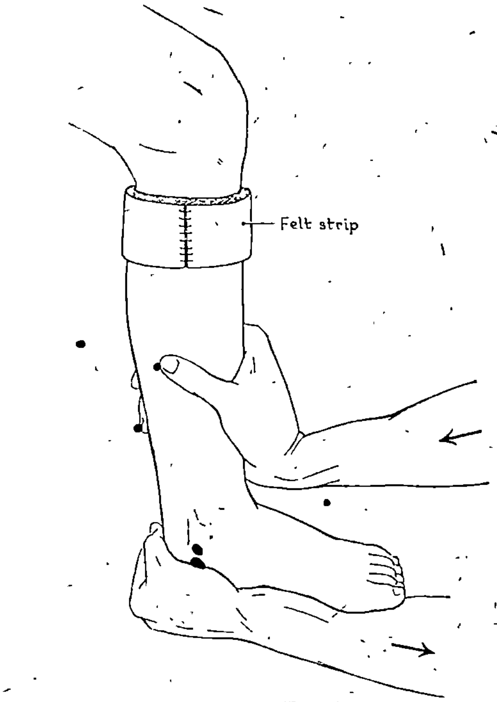

FIG. 2.

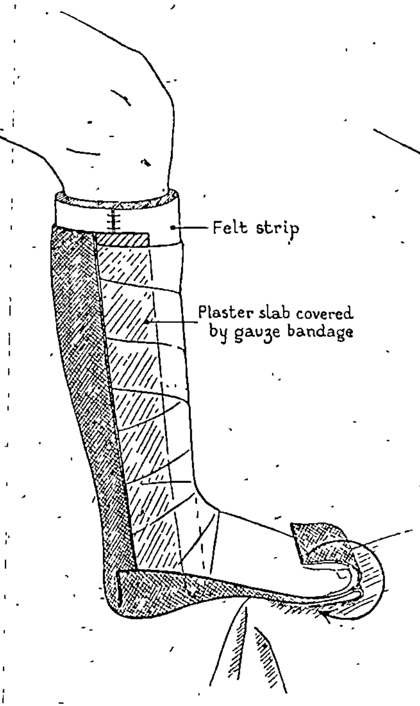

FIG. 3.

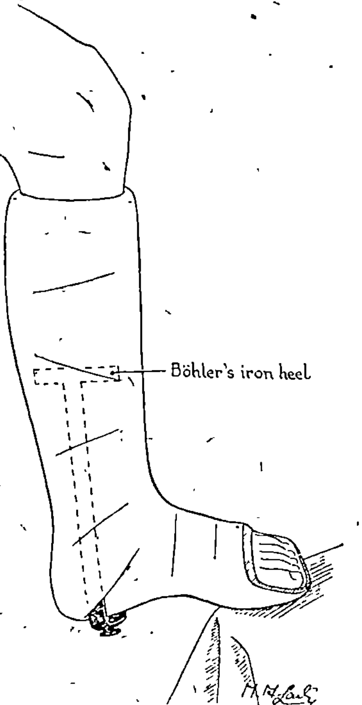

FIG. 4.

The fracture-dislocation is now reduced by taking the back of the heel in one hand and pulling the whole foot forward, while the other hand acts as a fulcrum and pushes against the front of the leg just above the ankle (Fig. 2). The lateral displacement is corrected by steady pressure inwards or outwards (depending on the type of fracture shown on the radiograph) while maintaining the forward position of the foot. Firm steady pressure is required, and there need be no fear of producing over-correction unless the internal malleolus is broken at exactly the joint level. The ankle is held in the corrected position and reduction confirmed by screening in two planes with a shock-proof portable x-ray set, but the foot-piece of the operating table must be removed before the antero-posterior view becomes possible.

When reduction is perfect in both planes the two plaster slabs are prepared by an assistant as follows. A six-inch plaster bandage six yards long is put in water and rolled backwards and forwards upon itself to make the lateral (stirrup) slab the required length. Only one bandage is used, and the slab is folded longitudinally upon itself and fixed to the inner and outer sides of the limb next the skin with a six-inch gauze bandage six yards long. The posterior slab is made in the same way from one plaster bandage, but its width is not halved by folding, and it is held in place by a plaster bandage (6 inches by 6 yards). Both slabs are put on very wet with three ends resting on the felt strip and the fourth hooked round the dorsal surface of the toes (Fig. 3). The margins of the posterior slab are cut by a knife for a distance of half an inch at the point where it passes round the heel, and both slabs are moulded smoothly on the limb by the surgeon, who has shifted his grip to include the plaster, but continues to hold the fracture fully reduced. The foot is held at a right angle and midway between varus and valgus, while the fingers and thumb press closely behind and below the two malleoli. The common practice of putting the foot in varus (inverted) is a mistake, and though the heel may be pressed into slight varus the forefoot should be, if anything, in valgus.

The fractured limb is now screened or radiographed in both planes, and anything short of perfect reduction necessitates removing the plaster and repeating the procedure. The plaster reaches the tips of the toes below and supports their plantar surface, but is cut away dorsally so that each toe is visible and movable (Fig. 4).

AFTER-TREATMENT

The patient is returned to bed with his plastered limb on a soft pillow and the knee slightly flexed under a cradle, which supports the bedclothes. A rubber heel is applied to the plaster next day with an elastoplast bandage; and the patient is encouraged to bear weight on the injured limb with the help of crutches or sticks, which he discards in a day or two. Böhler's iron heel is very good, but it has to be applied with a plaster bandage and interferes considerably with subsequent radiographs. On the other hand, a rubber heel necessitates the wearing of a felt or leather boot in any but the driest weather, as it soaks up moisture and then has to be changed. Rubber sponges can be bought for sixpence, and these cut in half transversely make excellent heels.

Walking is encouraged from the first, and the distance covered should be increased daily from a hundred yards to several miles. It is usually best to split the distance into three short walks rather than to take one long one, and to elevate the limb on a couch or stool during part of the intervals. Some swelling of the foot is common, and is perhaps useful in diminishing the risk of redisplacement. Circulatory troubles are rare in these fractures, but cyanosis or pallor of the toes must be treated by elevation of the limb or splitting the plaster. Pain is generally present for the first day or two and is disregarded if circulation and sensation remain normal, but the plaster must be split or removed and subsequently reapplied if pain persists or recurs. Bivalving the plaster is not advisable.

Usually a patient is able to walk unaided in a few days and can even resume his occupation during the period of fixation, which should last for a minimum of six weeks and be continued for ten or twelve weeks in severe fractures or in old patients. Radiographs are taken at fortnightly intervals until the plaster is removed. It is then replaced by a four-inch elastoplast bandage, which extends from the base of the toes to the tibial tuberosity and which is worn for three weeks. All bandaging may be then discontinued unless oedema persists, when another elastoplast bandage should be worn for three weeks. Movements of the ankle are encouraged as soon as the plaster-of-Paris has been removed, but no other treatment is necessary, and no good purpose is served by wedging the shoe or by the use of an outside short iron. The patient's desire for massage must be diverted to simple rehabilitation exercises (rowing and bicycling) which he has to perform himself.

Excellent results may be expected from this treatment, and most of the patients should ultimately regain painless movement of approximately normal range. The average period of disability after Pott's fracture in adults was reported to be forty-seven weeks when treatment was not given by an organized fracture clinic and eleven weeks when it was (B.M.A. Report, 1935). These figures probably do considerably less than justice to the first group, but there is now no doubt that segregation of fractures cuts the disability period to a minimum and almost abolishes what was previously a high rate of permanent incapacity after Pott's fracture. Good results are, however, less frequent when treatment has been delayed, when fixation has been insufficiently prolonged, or when the patient is old. Anything short of perfect reduction will of course militate against a good result, however careful the subsequent treatment.

Difficult Recent Fractures

Open operation is nowadays hardly ever necessary, though it is occasionally justifiable when a fractured internal malleolus can be seen on the radiograph to have rotated through 90 degrees. In such cases Böhler (1935) advises that the surgeon should be content to expose the fragment and replace it in position without any metallic fixation, though he doubts the necessity for doing even this in all cases. There are, however, some fractures which cannot be reduced by the above methods but which can be successfully treated by skeletal traction. This may be applied in one of two ways:

(*a*) *Gradual*, by inserting a Steinmann's nail through the os calcis and applying traction of from 10 to 30 lb. by means of a Böhler stirrup with the limb on a Braun splint. This method may take several days to accomplish its purpose, after which the weight should be gradually diminished and the limb left on the splint for a week or ten days and plaster then applied round the nail, which is removed in a few days if the radiograph still shows good position of the fragments.

(*b*) *Immediate*.—A Steinmann's nail is inserted through the os calcis and the limb extended on a Böhler screw-traction apparatus. Reduction is assisted by the hands, and the malleoli are compressed with an os calcis redresseur or Thomas wrench if necessary. The fracture is screened while the limb is still on the screw-traction apparatus and before applying plaster-of-Paris. The nail is removed when the position is seen to be satisfactory, and walking begins on a rubber heel as already described.

Old or Neglected Fractures

These offer considerable difficulty, and it is often hard to know whether to attempt reconstruction of a fracture or to arthrodese the ankle-joint at once. It is sometimes worth attempting correction up to about six months after the original accident in young patients, though this may entail an open osteotomy of the fibula. The osteotomy is performed in the line of the old fracture; the wound is sutured and the limb placed on a screw-traction apparatus with a Steinmann's nail through the os calcis as already described. Traction is applied and a redresseur (Böhler) compresses the malleoli. Position is checked by the *x*-ray screen and plaster is applied with the limb still on the traction apparatus. Subsequent procedure is the same as that described above.

Long-standing deformities which cause much pain are best treated by arthrodesis of the ankle. The joint surfaces have then been too much damaged by traumatic osteo-arthritis for a good result to be expected from reconstituting the fracture, and "there is no doubt that a well-arthrodesed ankle is infinitely superior to one in which a moderate result has been obtained by means of a reconstruction operation" (Ollerenshaw, 1929).

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Chronic Rheumatism.—The signs and symptoms of various forms of arthritis of the hip-joint and sciatica are discussed. Important points in treatment are said to be: (1) the prevention of haemorrhages after gold therapy by control of the platelet count, which should not be allowed to fall below 150.000 per c.cm.; (2) the administration of iodides; (3) the use of vitamin B_1; and (4) intradermal injections of histamine in cases of sciatica. The indications for surgical treatment are also considered.—Chronic Rheumatism in 1938. F. Françon.—*Rev. Médecine*, May, 1939, **56**, 272.

THE CANCER CAMPAIGN

Research to Continue during the War

The annual general meeting of the British Empire Cancer Campaign was held on December 14 at the Campaign's offices in Grosvenor Crescent. Lord Hailsham presided, and read a letter from the Duke of Gloucester, President of the Campaign, addressed from the general headquarters of the B.E.F. His Royal Highness said that he entirely approved of the Grand Council's decision to contribute towards the national effort by placing its appeal organization and equipment at the disposal of one of the national war charities (St. Dunstan's) instead of itself conducting appeals; but at the same time it was encouraging to learn that important cancer research would continue to be carried out under the auspices of the Campaign.

"I understand" (wrote the Duke) "that those who are skilled in such research and whose services are not required at this juncture for national scientific purposes will continue to apply their efforts to the solution of the problem. The cessation of any medical research, and more especially cancer research, except in circumstances where the personnel was not available, would be deplorable. . . . In England and Wales alone the population is depleted yearly by the loss of very many thousands of lives through this dire disease, and I am told that in the continent of Europe the deaths from cancer amount to at least half a million annually. It is therefore all the more incumbent on us to use every effort to bring cancer under early and complete control."

Lord Hailsham said that at the meeting of the Executive Committee, sitting with the powers of Grand Council, which was to follow immediately on the annual meeting, recommendations would be brought forward from the Grants Committee that an expenditure of £35,000 be made on behalf of about twelve cancer research centres and a number of independent research workers; this was only £6,000 less than the grants made last year. Part of this research would be financed out of capital put on one side for such an emergency and the balance made up from legacies. He went on to refer to the contributions which the Allies—Great Britain, France, and Poland (the native country of Marie Curie)—had made to the cancer problem.

Professor G. Grey Turner, in moving that the honorary officers and members of Grand Council and its standing committees be continued in office, mentioned that he had recently returned from a visit to North and South America, where, he said, the work of the Campaign and of cancer research generally was watched with the keenest interest and with the hope that it would not be eclipsed even in the present time of national preoccupation.

Lord Horder, in moving the adoption of the annual report, said that it would be obvious from this document, which was larger than any previous issue, in how many directions research was being pursued. The Duke of Gloucester's timely remark that the cessation of research, if personnel could by any means be found, would be deplorable gave a very desirable lead. When war broke out there was an almost universal move to close down voluntary effort, however urgent it might be; but second thoughts, as was so often the case, had brought wisdom. Cancer research, after all, could be carried out to some extent by those who were, from age or other disability, precluded from making a more immediate contribution to the service of the country.

Sir Alfred Webb-Johnson, in seconding, hoped that it would be made widely known that research was continuing to be helped by the Campaign. Thanks to the careful husbanding of the finances, it was possible to carry on to some extent even without fresh appeals.

Sixteenth Annual Report

The annual report of the Campaign, edited by Mr. J. P. Lockhart-Mummery, is a weighty document embodying separate reports from not far short of fifty laboratories, research departments, oversea branches, and individual research workers. This heterogeneous collection of information of unequal value has been reduced to an ordered narrative by the editor in his twenty-page summary in which he reviews the work which is proceeding, especially in the biological and physical fields. One slight point of criticism was voiced by Professor Grey Turner at the annual meeting—namely, that little or nothing was said concerning the surgical aspects of the problem. The editor writes of the new spirit of hopefulness which now animates cancer research. "Students seem to feel that a point has been reached at which ignorance may be transmuted, almost any day, into clear understanding."

He discusses the work now proceeding in many laboratories on cancer-producing agents such as some of the tars, which suggests that they exert their effects in conjunction with other agents. "Such assumptions as the doctrine that 'irritation' of itself is a cause of cancer have been discounted in favour of precise knowledge about the agents which do in fact cause the disease. The way has thus been opened to intensive study of particular as opposed to general problems. New facts, too, have emerged—for example, that a relationship exists between the quality of inhibiting growth and the quality of causing cancer. It is being asked, in consequence of this observation, if cancer may not represent an adaptation of the cell to circumstances in which normal activity has become difficult."

The experimental work on the biological effect of neutrons is yielding interesting information. The effects are similar to those produced by *x* rays and gamma rays, but there are some quantitative differences. As to the high-voltage *x*-ray plant in the cancer research department of St. Bartholomew's, this is now working satisfactorily at one million volts. The first treatment at this voltage was given towards the end of February. Not only is steady operation at 1,000 kV completely assured, but a kilovoltage of 1,200 is within the bounds of possibility. Over fifty patients have now been treated at 700 kV. "It is already certain" (says the department) "that an inoperable carcinoma of the rectum can be made to disappear; this satisfactory result has occurred in four out of eight cases treated."

Distribution of Cancer in England and Wales

The report contains the third and concluding instalment of a study by Dr. Percy Stocks of the distribution of cancer of various organs in the population of England and Wales. The standardized mortality ratios for separate counties and towns have been worked out, and in this instalment nine maps are given showing the distribution of mortality during the decade 1921–30 amongst females from cancer of various sites.

The general distribution of highest mortality is in North Wales, a small area south of the Wash, and the East Riding. For almost all the sites examined the urban rates are in excess of the rural, even after a correction has been made for the fact that many cancer patients resident in country districts die in town hospitals. In North Wales the high cancer mortality rate is entirely accounted for by an enormous excess of stomach cancer affecting both sexes. Some areas of the North of England with an adverse social environment, of which Durham County is an example, also show a large excess of gastric cancer, but here it is usually accompanied by a parallel excess of uterine and skin cancer and a pronounced deficiency of ovarian, breast, rectal, prostatic, and bladder cancer which is not seen in North Wales. Gastric cancer has a low incidence in the south-eastern counties, in Norfolk, and in most of the agricultural areas of the South and Midlands.

Dr. Stocks compares the cancer problem to a jig-saw puzzle in which many kinds of specialists are at work, with the danger that increasing specialization may result only in forming unconnected islands of the complete picture. It is the medical statistician's job to search for bridges between the islands.

VALUE OF CANNED FOODS

Canned foods were a war-time invention, 130 years ago, for the feeding of the troops during the Napoleonic campaign, so that the subject of Sir William Savage's Chadwick Lecture on December 12, the health aspects of canned foods, had a topical interest. He reminded his audience of the magnitude of the canned food industry to-day. Over 350 different canned commodities are on the market. Of the canned food eaten in this country between 85 and 90 per cent. is imported, so that such an industry requires two kinds of supervision—one in the country where the canning is done, and the other in the country where the food is consumed. Canning requires a high degree of knowledge and scientific attention to detail, and Sir William Savage said that he had studied canning conditions in the United States and Canada and had been impressed by the careful control which was exercised and the excellence of the food used. As for the examination of the product after arrival in this country, it was, if anything, over-thorough, but, of course, the reputation of canned food must vie with that of Caesar's wife.

Possible Risks to Health

Possible health risks were discussed by Sir William Savage under three heads: nutritional changes during manufacture, danger of chemical additions from the container, and bacterial infections or poisoning. Quantitatively the process of canning caused no detrimental changes; indeed, the advantage was with the canned food because everything in the tin was edible. Qualitatively there were possible changes in vitamin content. There was no loss in respect of vitamins A and D, and so far as vitamins B_1 and B_2 were concerned, while there was some loss, it was not greater than resulted when similar foods were cooked. It was with cooked food, not with raw, that canned products should be compared. Vitamin C also underwent some loss, but by modern canning methods much of this vitamin was retained, and here again the loss was comparable to that which occurred on cooking. In America canned tomatoes were even used as a source of vitamin C for infants. As for chemical contamination, in former days there was a possibility of this from solder, but solder was now very little used, and there was no evidence that either tin or lead was a health hazard with canned foods. For thirty years, Sir William Savage said, he had been looking for cases of tin poisoning arising in this manner, and had only discovered one doubtful instance. Lead poisoning was more important, being cumulative in its effect, and minute doses taken over a long time would be deleterious, but here again with modern canning there was practically no danger. Bacterial infections presented a more complicated problem. Three types of food poisoning must be considered—namely, botulism, infection with living bacteria of the food-poisoning type, and the "toxin" type of outbreak caused by the toxic products of bacteria. From 1915 to 1930 there were many outbreaks of botulism, incriminating some American canned products, but scientific investigation had led to efficient methods of prevention and the risk was now almost eliminated from commercial canned products, though it still attached to home canned. Food poisoning with living bacteria occurred with canned foods, but was comparatively rare, and the incidence was much less than with foods not canned. Outbreaks of the "toxin" type were at one time fairly frequent with canned foods, but the number had been materially diminished, especially so far as meat was concerned; canned marine products were still sometimes implicated.

A Beneficial Invention

Altogether Sir William Savage's verdict was that although canned foods did cause a certain amount of food poisoning they were safer than ordinary foods. The dangerous foods, he said, were those which were manipulated—for example, partially heated and then put out to cool, such as meat pies and made-up rissoles. He thought that a good deal of unnecessary prejudice was caused with regard to canned products because, on a case of food poisoning, the first question of the doctor was apt to be, "What canned foods have you been eating?" Scientific investigation did not justify that innuendo, and altogether the canning process, which might prove exceptionally useful during the war, was a most reliable and beneficial invention.

EXPERIMENTS ON ANIMALS IN 1938

The Home Office White Paper[1] setting out the licences granted in 1938 under the Cruelty to Animals Act, 1876, shows how carefully the authorities keep watch on the use of animals in scientific research. When an animal is used under licence alone it must be kept under anaesthesia during the whole of the experiment, and if pain is likely to continue after the effect of the anaesthetic has worn off, or if the animal has been seriously injured, it must be killed before it comes round. Various certificates are issued to allow the holder to modify the conditions of the licence. During 1938 licences were issued to 2,152 persons, and 566 of these performed no experiment. The total number of experiments performed was 958,761. Anaesthetics were given for all serious operations. Antiseptic conditions must be observed so that the wounds shall as far as possible heal without pain. If suppuration takes place the animal must be killed, but it is generally necessary for the success of these experiments that the wounds shall heal cleanly. After the wounds have healed the animals are not necessarily or even generally in pain, for important organs may be removed without causing pain after the operation. When a part of the nervous system is excised the resulting degenerative changes are painless. No cutting operation more severe than a superficial venesection was performed under Certificate A—that is, without an anaesthetic. The 908,846 experiments performed without anaesthetics mostly concerned inoculations and feeding; some were oral administrations, inhalations, external applications, and the abstraction of body fluids. Certificate A is chiefly given to allow the animal to be kept without an anaesthetic during the time required for the development of the results of a drug or injection. In many of these experiments the results are negative and no pain at all is caused. Licences were granted to forty-eight cancer investigators, who performed over 35,000 experiments, mostly without anaesthetic. The bulk of these were inoculations in mice or exposure of animals to radiations. The large majority of all the experiments were performed for municipal or Government authorities.

During the year the inspectors made over a thousand visits to registered places, mostly without notice. They found the animals suitably housed and well cared for and the licensees generally attentive to their duty. No better indication of the care taken to protect animals could be given than the report of the trivial irregularities observed by inspectors. A licensee allowed to inject fluid into nerve trunks inadvertently divided two nerves; another, entitled to give inoculations to animals at one place, gave some at another; two more licensees performed ligation of blood vessels in rabbits, an operation not covered by their certificate. These offenders were all admonished or warned.

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[1] *Experiments on Living Animals.* 1939. H.M. Stationery Office, York House, Kingsway, W.C.2. (Pp. 67. 1s. net.)

Encephalography in Neuroses.—Wigert describes encephalographic findings, usually of a type indicating cerebral atrophy, in a number of apparently psychoneurotic patients, and ascribes an aetiological significance to them. He concludes that, in certain cases which we call "psychoneurotic," the essential condition is a character anomaly which is organically conditioned and which cannot be influenced by psychotherapy or other methods hitherto employed.—Encephalographic Findings in So-called Psychoneuroses (Ger.): V. Wigert.—*Acta psychiat. Kbh.,* 1938, **13**, Fasc. 4, 401.

Reports of Societies

CONVALESCENT SERUM IN ACUTE RHEUMATIC FEVER

At a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on December 12, Sir **WILLIAM WILLCOX** presiding, Dr. C. A. **GREEN** communicated some preliminary observations on the use of convalescent serum in the treatment of acute rheumatic fever.

The work which Dr. Green brought forward related to a number of young male adults in a physical training establishment who had shown rheumatic manifestations. In the majority of cases a nasopharyngeal infection antedated the insidious onset of pain in one or more joints which necessitated medical attention, when the patient was found to be febrile. On the whole the joint lesions in these cases had not been very striking and rapidly improved, leaving no permanent injury. The initial pyrexia rarely lasted longer than one week, but exceptional cases continued febrile for months. The symptoms were gradually relieved by salicylates. Cardiac complications were found in certain of the cases, but fortunately a number of the patients showed no tendency to develop cardiac lesions, and as these were otherwise healthy young adults it was decided to use a serum taken from them during their convalescence after acute rheumatic fever. The serum was taken from four to eight weeks after the temperature had subsided, in the absence of any other indication of persistent infection.

The serum, which was filtered and preserved, was used for the treatment of cases of acute rheumatism presenting the classical fleeting joint pains with a marked tendency to cardiac involvement. The initial effect of serum therapy had been in most cases satisfactory in that the temperature and pulse rate rapidly returned to normal limits and the symptoms were relieved. He gave the case histories and temperature charts of fifteen patients, some of whom had been treated by serum alone, while in others this treatment had been supplemented by further measures. Of ten cases in which no salicylates or other preparations were used during the illness seven reacted favourably to convalescent serum. The injections were mostly from 10 to 50 c.cm. of serum, generally given intramuscularly, on three successive days. Out of seven cases in which the treatment was successful, six were primary attacks and one was a recurrence. Given in the early stages the serum did appear to reduce the period of pyrexia. Of the fifteen cases nine were considered to have benefited. The volume of serum available was not large enough to permit really adequate dosage in every case. Two of the patients showed a partial collapse, but both of them rapidly responded to appropriate treatment. In a few instances the serum had no effect on the course of the disease. The final estimation of the value of this mode of treatment must be deferred until all possible cardiac lesions had been assessed.

In attempting to demonstrate the mechanism by which such serum might act it was noted that the intradermal injection into the human skin of joint fluid from an active case of acute rheumatism produced an erythematous swelling. Serial specimens of serum taken during convalescence from the patient from whom the joint fluid had been obtained were mixed and incubated *in vitro* with the joint fluid. It was found that serum taken in the later stages of convalescence prevented the appearance of the erythematous reaction on intradermal injection of the mixture, whereas serum in the early stages of the illness had no such effect. The nature of this reaction was unknown, but it was possibly an example of toxin-antitoxin neutralization.

Sir **WILLIAM WILLCOX** said that rheumatic fever or acute rheumatism was one of the most fascinating subjects in medicine. Those of them who worked in hospitals thirty or forty years ago would remember how much more common and virulent acute rheumatism was in those days. The search for the cause of acute rheumatism had so far been in vain. Every two or three years someone discovered a fresh "cause," but all that was known was that the haemolytic streptococcus was very closely associated with the condition. It had not been demonstrated as yet whether another factor was also at work. There had been great hopes that Swift in America had discovered the associated causal factor in rheumatic fever, but at the recent conference in the United States in September last he very frankly stated that he had found that the cause of rheumatic fever was still elusive. The unpleasant symptoms—namely, fever and pain—could be controlled by salicylates, but no remedy was known which would control the development of cardiac lesions unless it was prolonged rest and the utmost care to avoid infection. He thought that Dr. Green's paper offered some hope that the cardiac complications of rheumatic fever might be prevented or minimized by the use of convalescent serum. It was interesting that in two cases anaphylaxis should have occurred, much as in the case of foreign serum, though the onset was not so rapid and the symptoms, although alarming, were not fatal.

Polycyclical Rheumatism

Dr. W. H. **BRADLEY** said that if a series of untreated cases of rheumatic fever were watched they would be found to fall quite naturally into two groups—a monocyclical group, which resolved quite rapidly, within perhaps a week of the onset of the disease, and continued to make progress to recovery, and a polycyclical group, which persisted for weeks and months. It was therefore very difficult without taking a large series of controls to come to any conclusion whatever about the value of serum therapy. In the polycyclical group rises and falls of temperature were quite common, and at the period of the rises the appearance of new manifestations of rheumatism was to be expected. Some work was done on human serum a few years ago by Coburn, who had noticed that as the patient recovered the anti-streptolizing titres rose to high levels, and therefore he selected human serum in which there was a high anti-streptolizing titre and used it as a therapeutic agent. But he was discouraged by the rather severe collapse-like reactions which he occasionally encountered, and therefore he did not persist. The liability of rheumatic patients to collapse, not suddenly, as was usual with anaphylaxis, but rather later, after the injection of human serum, was a phenomenon which Coburn had noticed. One little point which could be controlled in the further studies that he hoped Dr. Green would be able to make was the determination of the albumin-globulin ratio of all the serum he preserved. Certain tables which Dr. Green had shown regarding the neutralizing of a hypothetical toxic substance in joint fluid also furnished a reminder of the polycyclical nature of the disease and of the precipitin reaction which Coburn had recently described. Coburn had stated that serum taken from a rheumatic subject during the last few days before he started his rheumatic attack contained a substance which was precipitated by serum from the patient during the cycle, and that a similar precipitation reaction occurred between the serum taken from the patient during the cycle and during the interval between cycles.

Dr. H. J. **PARISH** asked what happened in the use of serum of normal non-rheumatic subjects. Were reactions obtained with normal serum?

Dr. **GREEN** replied that he agreed entirely that clinical rheumatic fever showed these monocyclical and polycyclical varieties or degrees. What he had brought forward was only a preliminary investigation and was subject to many qualifications in the light of later research. The effect of normal serum in these cases had not been tried out.

Prophylactic Vaccination against Pertussis

At the same meeting Dr. I. H. **MACLEAN** read a short paper on "Prophylactic Vaccination against Whooping-cough."

Vaccination against whooping-cough in this country was started by Freeman, and the early results were encouraging, but pertussis vaccine somehow came into disrepute. It was only vaccines from very smooth strains of *B. pertussis* that were antigenic. There was only one way of controlling whooping-cough and that was by the cough-plate method of diagnosis. At least half the cases which came to his hospital as such were not pertussis at all, as established by the cough-plate method, though there was a spasmodic cough. The cough-plate had drawn attention to what might be a new disease—namely, para-pertussis. At the Annual Meeting of the British Medical Association in Aberdeen this year Sir John Ledingham had suggested that pertussis vaccine might be combined with alum-precipitated diphtheria toxoid in prophylaxis against both diphtheria and pertussis. Some experiments had been carried out at St. Mary's which had shown that vaccine precipitated by alum remained a good antigen, but it had not yet been possible to work out the best dose and the best conditions.

Dr. Maclean gave particulars of the courses of immunization which had been followed at St. Mary's:

	Clinic Cases	Exposures		Clinic Cases	Exposures
1936	64	5	1938	119	8
1937	153	22	1939	140	10

To this series had to be added forty-six cases from other sources with forty-six exposures, and in the whole series there had not been one known failure. This was subject to the qualification that owing to dispersal following the war the clinic had been closed and it had not been possible to keep track of cases. The statistics did not refer to cases vaccinated during the contact period. Immunization during the incubation period was not often successful. At most 25 per cent. of the cases did not develop whooping-cough in that they did not have severe cough and vomiting, but nearly all of them would give a positive cough-plate. Possibly in another 30 to 50 per cent. the disease could be modified, but in the remainder there was no success at all. There was a stage when immunization during the contact period might do no good, and sometimes he had a suspicion that it might do a little harm. His cases included only those which had been immunized at least one month before being exposed to the disease.

His practice was to give three or four doses of 4,000 million of the vaccine at weekly or bi-weekly intervals, and then a stimulating dose of 4,000 million one month later, using the secondary response to push immunity up to its maximum. The total dose was thus from 16,000 to 20,000 million. He suggested that adequate prophylaxis could be obtained by smaller doses than the very large ones sometimes recommended.

Professor **ALEXANDER FLEMING** said that the prophylaxis of whooping-cough by vaccination was a therapeutic measure of first-class importance, comparable with typhoid vaccine, and far more valuable indeed for the reason that in this country whooping-cough was a widespread disease, whereas typhoid was not.

Dr. **YOUNG** asked whether para-pertussis was a separate disease and whether the vaccine of pertussis could protect against it.

In reply to this and other questions Dr. **MACLEAN** said that from some work he had done he was led to believe that an attack of para-pertussis would not protect against pertussis. A few strains of para-pertussis were now put in pertussis vaccine, but it was not yet decided how important it was nor what percentage of the vaccine should be made from para-pertussis. At the moment the provisional figure was 10 per cent. The immunity conferred was supposed to be lifelong, but now and then there were reports of recurrent attacks. As to the best age for vaccination, it was well to choose a time when the child was completely healthy, free from even a slight infection, and the best age was towards the end of the first year. Severe reactions were sometimes encountered, especially when dealing with under-nourished children and children who might be suffering from bronchitis or some minor ailment.

DISCIPLINE AND LEADERSHIP

The various "men of destiny" who, without any of the traditional prestige of the old emperors and kings, have imposed upon Europe a despotism greater than theirs make a rich theme for the psychologist, of which Dr. H. **CRICHTON-MILLER** took advantage in his address to the Medical Society of Individual Psychology on December 14.

Dr. Crichton-Miller, whose subject was "Discipline and Leadership," said that the first business of a dictator was to foster and exploit the suggestibility of his people. To ensure undiscriminating acceptance of dictatorship instinctual passions had to be maintained at a dynamic level and rational discrimination discouraged. Thus the national life in many countries was becoming increasingly antagonistic to the individual point of view, and as the standard of self-discipline fell that of coercive social discipline was raised. In democratic countries leadership was usually based on prestige or tradition, such as that of the hereditary monarch. Again, the history of the British Empire was full of such examples of leadership as that of Brooke of Sarawak, whose prestige was largely based on his English origin. Then there was the leadership accorded to physical superiority; men had always been ready to recognize the leadership value of physical qualities of a high standard. Another aspect of leadership was suggested by the recent installation of the Dalai Lama of Tibet, where the whole tradition and ceremony revealed the necessity for prestige deriving from magical sources for the primitive mind. Age was another source of prestige, though this was the subject of contradictory opinions, and Downing Street and the Oxford Union might not think alike. The French nation was interesting as a study in the psychology of leadership; the French were realists, less influenced by magic or romance than other peoples, and chose or displaced one leader after another as he pleased or failed to please the electorate—the opposite mechanism of prestige from that attaching to heredity or caste. There were also leaders, of whom Gandhi was a conspicuous example, who attained and kept their positions on purely psychological grounds. As for the mob leader, he was likely to gain control simply by the loudness of his voice and the dramatic quality of his manner. The mob would follow anyone who satisfied an uncritical demand for a leader who appeared to know what to do in an emergency.

From all this Dr. Crichton-Miller concluded that there was no real identity between the qualities which brought about the acceptance of a leader and those which made for good leadership. The best leaders would be chosen only by a group which was capable of rational discrimination, while any group which was stirred by overwhelming emotion, especially if it comprised a proportion of persons of low intelligence, would accept a leader at his own valuation. Dr. Crichton-Miller developed this point later in reply to a discussion when he said that he had come to feel that the ability to recognize a good leader was something intuitive and not really a development of our educational system. As things stood the political charlatan had a better chance of gaining leadership in many so-called educated groups than among simple folk who were more intuitive. As for the functions of a leader, the first was vision, without which the people perished—a protective vision for the fear-ridden group, an aggressive vision for the resentful, an emancipating vision for the downtrodden. He should be able to persuade the intelligent and open-minded of the wisdom of his ideals, but this was not enough for the unintelligent or those under powerful emotion. As an ideal leader he mentioned Abraham Lincoln, who used the strength of the North to give the slaves their freedom. No doubt in simple communities, such as the Eskimos or South Sea islanders, leadership was rarely called for; only as competition sharpened had social discipline to be called in to maintain justice. Later came the phase, in which we were at present, of education and rational control, with social justice based not only upon instinctual satisfactions but upon self-discipline. Beyond this was Utopia, in which self-discipline alone was enough to maintain social justice in spite of instinctual and narcissistic frustrations.

Local News

ENGLAND AND WALES

The King's Fund

At the meeting of the Council of King Edward's Hospital Fund for London held on December 19 H.R.H. the Duke of Kent read a message from His Majesty the King, who said:

"New methods for the prevention and cure of disease entail ever-increasing expenditure. Co-ordination and co-operation must constantly be sought, and in this connexion I am sure that the Council will feel that no greater tribute could well be paid to the work which the King's Fund has tried to do than the recent splendid gift of Lord Nuffield to form a nucleus of a fund for hospitals outside the London area." The Duke of Kent in his presidential speech said that the King's Fund would this year distribute £304,000. Of this sum £43,500 had been paid in special emergency grants and an extraordinary grant of £15,000 had been made to the Westminster Hospital and a further one of £15,000 towards the building of a new hospital on the amalgamation of the Central London and Golden Square Throat, Nose and Ear Hospitals. In view of the special circumstances this year, a further distribution would be made when the hospital accounts for 1939 become available. In talking of the needs of the hospitals the Duke said: "The Government is responsible only for the cost of the beds reserved for casualties. But for the civil work, which has never stopped and is now increasing, the hospitals are dependent on voluntary contributions, and the need is all the more urgent because so many of their supporters are themselves hard hit by the war." Sir Harold Wernher, in presenting the report of the Emergency Bed Service, said that since it opened in June, 1938, 10,000 cases had been admitted to hospital through this agency. Though the Service had been closed on the outbreak of war as the staff had been seconded to the Ministry of Health for work in connexion with the casualty scheme, it had been possible to reopen it by the middle of September, and it was now in full operation and handling a steady flow of cases.

A Maternity Home for Officers' Wives

Not the least among the very deserving projects to which we are asked to give our help at this time is that of a maternity home for the wives of officers. Many officers' wives in war time are unable to meet the ordinary fees of a maternity home, and they have usually no claim upon the military maternity homes. A real need thus exists, but thanks to the generosity of Mrs. Edward Baron, who has lent Fulmer Chase, near Slough, rent and rates free for the duration of the war, the first steps have been taken to supply this need. Fulmer Chase, which stands in 230 acres of country, is being adapted to accommodate twenty-eight beds, an isolation ward with a further two beds, a labour ward, lunch and dining room, and staff quarters. There will be two resident medical officers having special experience in obstetrics, and a consultant staff, drawn from the London hospital staffs in that sector, will visit the home when required. The fee for the majority of beds will be 15 guineas for three weeks, and this will be inclusive of all medical and surgical attendances, nursing, and maintenance. There will also be provision for grants in aid of special cases. It is hoped to open Fulmer Chase for the reception of patients about January 15. Promises of sums sufficient to endow two beds for the duration have been received, but funds are urgently needed if the work of the home is to be a success. The council responsible for carrying out this project includes Sir Comyns Berkeley, Dame Louise McIlroy, Professor W. Fletcher Shaw, and Dr. Frances Huxley, and donations should be sent to Sir Comyns Berkeley, who is the honorary treasurer. Further information and forms of application for admission, etc., can be obtained from the honorary secretary, Miss L. M. Brooks, Maternity Hospital for the Wives of Officers, 60, Portland Place, W.1.

Retirements from L.C.C. Service

Dr. J. A. H. Brincker, principal medical officer in the public health department of the London County Council, is retiring at the end of the year under the age limit. The Emergency Committee of the Council, after describing Dr. Brincker's work in a full-time capacity since 1911, and in a part-time capacity for several years before that, says that his knowledge has proved invaluable and "by his retirement the Council will lose the services of one of those rare experts whom it will be difficult to replace." Dr. W. K. Knobel, a senior medical officer, is also retiring under the age limit after eighteen years in the Council's service. To him the successful development of the tuberculosis scheme in its early days was in no small measure due, and the Committee says that by his retirement the Council lose the services of an able and experienced officer.

Memorial to Dr. Mabel Campbell

By her manifold interests and her vivid, generous, and courageous personality Dr. Mabel Campbell won a unique place in the life of the North of England. She was deeply and universally beloved. There is a general desire among her many colleagues, patients, and friends to perpetuate her memory in a manner expressive of her spirit. A committee representative of her various activities has been formed to institute a memorial fund, which will be applied to some beneficent purpose in keeping with Dr. Campbell's life of service. The chairman of the committee is Professor R. B. Green, Dean of Medicine, the Medical School, King's College, Newcastle-on-Tyne, and the secretaries are Mrs. George Hall and Miss Veronica Nisbet. Anyone who wishes to contribute should send a donation to the treasurer, Dr. Freda Herbert, the Medical School, King's College, Newcastle-on-Tyne.

FRANCE

[FROM OUR CORRESPONDENT]

Settlement of Doctors' Disputes by a "Conseil de Famille"

The French doctors' *Conseil de Famille* is an informal gathering of medical men before whom disputes between doctors can be brought with a view to a fair and peaceful settlement. The washing of dirty linen in public and the cost of formal litigation are avoided, and the chances of a satisfactory settlement are enhanced by the *esprit de corps* which reigns at these friendly and conciliatory tribunals. To give a fair example of the type of case brought before the *Conseil de Famille* reference may be made to a dispute ventilated anonymously in *Concours Médical* for August 27. A village was served by two doctors and a chemist, whose partiality for one of the doctors would seem to have been offensively demonstrative. One evening a patient with a fracture of the clavicle was given a prescription by the doctor in attendance. When the prescription was taken to the chemist's house the maid said that her master was not at home; she added in the presence of four witnesses that if the prescription had been written by the other doctor the chemist might have been at home. Dr. Paul Boudin, legal adviser to *Concours Médical*, is of opinion that a chemist is as much within his rights in refusing to serve a potential customer as any other tradesman, with this reservation, that the practice of pharmacy being in a certain sense a monopoly the pharmacist must have some reason for his refusal more valid than a personal animosity. Were such a case to be brought before a court of law the odds are that the maid would deny that she uttered the words reported by the witnesses, and the only result to be prophesied with certainty would be a further lowering of the prestige of the medical profession. Hence Dr. Boudin's advice to the offended doctor to appeal to the local medical society, which would consult with the local pharmaceutical society in order that a *conseil de famille* composed of members of both societies could arbitrate.

Diphtheria Inoculation

At a recent meeting of the French Academy of Medicine a resolution was adopted in favour of enforcing the new law concerning compulsory inoculation against diphtheria. The need for this reform has become pressing on account of mass migrations from France's eastern frontier and Paris to other parts of the country. According to this law the prefect of a commune threatened by an outbreak of diphtheria shall be entitled to prescribe compulsory anti-diphtheria inoculation for all children from the ages of 1 to 14 years. Only an injection *de rappel* of anatoxin would be necessary for those children certified by a doctor as having already been inoculated with anatoxin against diphtheria.

War Items

French medical students who have attained a certain level in the medical curriculum and who have been called to the colours before passing their clinical examinations are to be exempted from them on fulfilling certain conditions. The dossier of every medical student will, however, be scrutinized before such exemption is given.

It is announced that a group of Belgian surgeons are organizing an ambulance service with beds for 100 to 150 surgical cases. This service, fitted out on modern lines, will be called "Ambulance Antoine Depage" in memory of the Belgian surgeon who played so important a part in the last war.

Correspondence

Treatment of War Fractures by the Closed Method

Sir,—In several of your recent issues Dr. Trueta and his supporters, who advocate closed plasters for compound fractures, and his opponents, who fear the risk of encouraging anaerobic infection, have all omitted to mention a very simple modification of technique which enables one to have the best of both worlds.

The method referred to is the use of a plaster slab round two-thirds of the circumference of the limb, attached by a circular bandage of wet book-muslin which completes the remaining third of the tube. If the occurrence of rising temperature, excessive smell, or local discomfort makes the surgeon anxious to inspect the wound, all he has to do is to cut across part of the muslin bandage, anchoring the loose ends with adhesive strapping. If he finds no indication for removing the whole plaster, integrity can be restored by the addition of a new wet bandage. The book-muslin, from which most hospitals manufacture their plaster bandages, contains some starch, and when applied wet it absorbs some of the plaster over which it passes, so that it has none of the tendency to slide which is so troublesome with dry bandages on plaster; also, it is discouraging to the patient's fingers, unless he is quite determined to interfere, but such patients will manage to disintegrate the stoutest plaster.

The method was introduced to me during the last war by Dr. Danforth of Providence, U.S.A., but has long been popular with French surgeons and is used with modifications by Dr. Böhler in Vienna. I have used it ever since, particularly for cases of Dunn's tarsal arthrodesis, which are really compound fractures of special difficulty and in some congenital cases are subject to tiresome blisters, which heal much more quickly when dried by exposure to air.

When it is desirable to expose the wound to more rapid evaporation than can occur through the plaster, I find the best method of protection from dust, etc., is to cover the opening in the plaster loosely with a little box cut from "windowlite" and bound into shape with adhesive strapping. This substance allows ultra-violet light to penetrate to the wound; it is easily cut with ordinary scissors; it is less likely to tear the nurse's hand than wire netting; and it can be washed with antiseptics, so that it lasts for weeks, not needing any gauze or only a strip at the edges. Thus, though it is not cheap to buy, it works out much more economically than the old-fashioned repetition of gauze dressings.—I am, etc.,

Bath, Dec. 17. M. Forrester-Brown, M.D., M.S.

Sterilization and Storage of Dressings

Sir,—In a C.C.S. or base hospital an ample supply of small-sized dressing packages is of great advantage. It is inconvenient to have to search haphazard at a bedside for different materials within assorted bundles. Furthermore, the supply of sterile drums and of towels may be very restricted. For both sterilization and storage of small dressings cigarette canisters have proved very useful. The ration tins of the familiar brands are procurable in unlimited numbers, and may be used again and again.

The tin is converted into a miniature "drum" by piercing about a dozen fine holes in the lid (from without inwards) to provide entry for steam and subsequent vacuum drying. A tin can be packed with at least six large swabs, a few pledgets of wool, and on top a dressing towel twelve inches square. The loaded tins are packed in a large drum (it will take forty or more), and sterilization is carried out in the main appliance. As soon as is convenient each tin is removed from the main drum under aseptic conditions (the sister or medical officer should wear gloves and gown), and the lid and upper half-inch of each tin is dipped into paraffin wax which has been allowed to cool from 160° C. to 75° C. A completely effective and lasting sealing of the perforations and lid margins results.

In practice it has been found that these dressing preparations may be stored for long periods, and that the wax sealing is not injured by rough handling. In the wards and for minor operations their compactness has proved handy and economical. Sterility of the dressings is assured.—I am, etc.,

Bruce M. Dick,
Major R.A.M.C.; Surgical Specialist,
Nov. 28. No. 10 General Hospital.

Stored Blood for Transfusion

Sir,—I am very glad that Dr. A. C. Kanaar (*Journal*, December 16, p. 1206) has so temperately discussed ways of deciding the value of stored blood.

If we suppose for the sake of argument that stored chilled blood has about the same value as an equal quantity of blood serum dyed with congo-red, and that it can improve the colour and pulse of a patient to the same degree, we can see at once what a disastrous thing it would be to allow our present organization for the supply of stored blood to supplant one for the supply of warm fresh blood after an air raid. A recent paper by O'Shaughnessy and others justifies one in presuming that stored blood may be better than dyed serum, since they have shown that a solution of haemoglobin can sustain life, though for a limited period. My small clinical experience of using stored blood has left me anxious and uneasy, and I confess I have reverted to the use of fresh blood when the patient is ill. I should receive the greatest help from such an experiment as the following, but I have no facilities for carrying it out.

> Establish what is a constantly fatal blood loss for a suitable given animal.
>
> Compare the effects of transfusion of serum, of chilled stored blood, and of fresh blood on groups of such animals previously bled to the fatal point.

If this experiment has already been done I should be grateful for the reference.

I am inclined to the opinion that we could establish an organization for the early supply of large quantities of fresh blood, which would be practically as good as the present chilled blood supply organization so far as British towns are concerned.—I am, etc.,

Birmingham, Dec. 19. Hugh Donovan.

Gas Injuries to the Eye

SIR,—With regard to the treatment of gas injuries to the eye, may I suggest the following routine treatment. The contaminated eye should be flushed with liquid paraffin, which should be instilled in a continuous or intermittent current, the overflow being absorbed with cotton-wool so as not to contaminate the adjoining skin. As mustard gas readily dissolves in liquid paraffin it will wash away all the poison from the conjunctival sac. A drop of cod-liver oil or, better still, cod-liver oil irradiated with ultra-violet rays, possessing an even higher bactericidal power (see *Lancet*, 1939, **2**, 1023), should be instilled every hour into the eye for twelve hours.

I am confident that this method would better justify "the hope of mitigating the damage to the eye" than flushing it with plain water (which dissolves mustard gas less than 1 in 100) as indicated in the official handbook.—I am, etc.,

Edinburgh, Dec. 15. M. LICHTENSTEIN.

Tuberculosis in the Last War

SIR,—In your leading article in the *Journal* of December 16 (p. 1191) upon public health in war time the view is expressed that "on balance it would almost seem that a state of war—apart from its hideous toll of young male life—may have a hygienic value for a community." Among statistics adduced in support of this astonishing statement are those for tuberculosis from 1913 to 1919. "Tuberculosis," it is asserted, "notably declined during the war. In 1913 the new cases of tuberculosis had numbered 117,000, but they never reached the six-figure level again, and in the first year after the war they were down to 77,000." Now, apart from the fact that 1913 was the first year in which notification of all forms of tuberculosis became compulsory in this country—with the consequence that the figure was swollen by arrears and therefore partly fictitious—notification figures are not generally accepted as providing an adequate estimate of trends of tuberculosis. As pointed out by Sir Arthur MacNalty, "The mortality figures are a much more trustworthy guide, and in almost all cases the incidence of the disease has had to be measured by its death rate."

Up to 1914 the death rate from tuberculosis in England and Wales for all ages taken together had been steadily declining, but during the war the decrease gave place to a material increase in mortality, the decrease being resumed after the termination of hostilities. Over the decade that included the war period the standardized death rates per 100,000 living were: 1911, 146; 1912, 136; 1913, 134; 1914, 135; 1915, 144; 1916, 142; 1917, 148; 1918, 154; 1919, 123; 1920, 112. The total deaths from tuberculosis during the years 1914–18 were 20,000 to 25,000 in excess of those expected on the assumption that the 1913 death rate had been continued throughout. The war-time rise particularly affected young women, whose mortality from pulmonary tuberculosis reached in 1918 a figure as high as it had been about 1890.

The increase in tuberculosis during the last war involved most of the belligerents and also some neutrals, such as Holland and Switzerland, and a considerable literature has arisen on the subject. The worst effects were in Germany and Austria (to which attention was drawn in an editorial of this *Journal*), where the food restrictions were the most extreme. It has been estimated that Germany lost an extra 280,000 civilian lives from tuberculosis as a result of the war and subsequent economic depression (1914–27); this works out as one person for every ten fatal military casualties. The increased mortality both in belligerent and in neutral countries was mainly among the civilian population, and was greater among women than among men. The worst year of all was 1918, and there was a great fall in most countries when peace was restored.

In the report of the Chief Medical Officer of the Ministry of Health for 1920 the causes to which the increase in tuberculosis mortality during the war were generally ascribed were stated to include underfeeding or lack of particular foodstuffs, greater industrial employment of women, and the general outbreak of influenza—to which possible causes must be added overcrowding due to shortage of fuel. What is the outlook for the present war? An American authority has suggested that "all in all, it is a foregone conclusion that the excellent record of diminishing death rates that has characterized the last few decades will suffer a serious setback in the warring countries during the current and impending struggle, even if we are spared so devastating a visitation as the influenza pandemic of 1918–19." Let us hope that this prognostication will not be fulfilled, and that the serious attention being devoted to the problem of tuberculosis in war time will avert the increases that in fact occurred during the years 1914–18.—I am, etc.,

London, N.W.1, Dec. 18. P. D'ARCY HART.

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Administration of A.R.P. Casualty Services

SIR,—In your issue of November 18 (p. 1021) Dr. H. Mainwaring Holt raises many points of interest and instruction regarding the A.R.P. casualty service. Unification between voluntary and municipal hospitals and first-aid party stations is a necessary condition for the efficient working of the treatment scheme. Concerning training, we have found it desirable to establish, so far as possible, a uniform course for the personnel at the first-aid posts, consisting of lectures in first aid, in the medical treatment of gas casualties, and in the theory and practice of nursing. These lectures are given in a central depot, to which the nurses are brought, for one and a half to two hours each weekday. Exercises are also held at the posts in which the first-aid parties and the ambulance section take part, and casualties of various types are treated and decontaminated. Volunteers are notified when exercises are to be held, and are encouraged to take part in the work of dressing, undressing, decontamination, and in the supervising of patients in the rest rooms. The presence of the medical officer attached to the post at these exercises helps considerably in convincing the volunteers that they themselves have a part to play in the scheme.

It is a question as yet unsolved whether it is advisable to depend on volunteers for the majority of the work done at the posts. The response to this need must vary from place to place, depending on the social responsibility of the population, their educational level, and also on the congestion of the area. It would seem that a trained nurse is necessary, perhaps all the time, or, if this is not possible, for her to be within call in case of emergency. Continuous staffing, even on a small scale, would seem to be a necessity, and this could be implemented by further auxiliaries or volunteers when a raid occurred. It is inconceivable that a first-aid post could be closed for days or weeks and reopened at an hour's notice so as to be in a condition for duty. The mobile units in urban areas are intended to supplement posts already in being, and where they are called upon to occupy separate buildings these are in addition to the permanent first-aid posts at work.

It is undesirable for medical officers to accompany first-aid party personnel to decide the disposal of casualties on the streets; they are needed in the hospitals and the posts. The first-aid men on the streets may not be at such a disadvantage in deciding where to send casualties. They are provided with powerful battery lamps, and should be able to decide whether a patient may be assigned in the first place to the categories of "walking wounded" or "stretcher case." They are instructed that the former comprises cases of skin contaminations, abrasions, contusions, minor lacerations and haemorrhages, and fractures of the upper limb, and that "stretcher" cases (intended for hospital) comprise patients suffering from lung irritation, fractures of the lower limbs, spine, pelvis, ribs, and skull, and generally those who are not able to assist themselves.

The experience of the hospitals in the larger cities during the Spanish Civil War has tended to show that first-aid posts were not of great use and that patients were better brought direct to hospital. This is more satisfactory when the number of casualties at one time is not great. We cannot presume that aerial bombardment, if this is attempted on a large scale, would result in such relatively small numbers as occurred in Spain; they are likely to be much greater from the force of armament engaged. In such circumstances first-aid posts are likely to be of value in relieving hospitals of the minor casualties. In this respect a first-aid post adjacent to a hospital is of value.

In the matter of decontamination of the skin first-aid posts are likely to be of great use. Hospitals are hardly to be expected to tackle a problem which is essentially a hygienic one. Eye irrigation is another matter. The skill of first-aid personnel in irrigation of a number of patients and for the requisite time is still untested. Decontamination of severely injured patients cannot be attempted under the usual sprays and is perhaps better performed by the nurse at a sink, with running water and the necessary bleach cream, soap, and sponge. Such shocked patients will need to be handled with great care, but will require washing before their injuries can be attended to in order not only to safeguard themselves but to avoid contamination of the nursing staff.

Lastly, the first-aid post will perhaps perform yeoman service in resuscitation by providing rest, quiet, and liquid stimulant to the lesser-injured patients, and reassuring the highly excited and hysterical by offering encouragement and exhortation to their sense of duty, in a department designed for their help.—I am, etc.,

John Scully, M.B., Ch.B., D.P.H.,
Medical Officer in Charge of First-aid Posts,
for Medical Officer of Health.

Salford, Dec. 11.

Sedatives for Nervous Casualties

Sir,—The Emergency Medical Service memorandum issued by the Minister of Health dealing with the treatment of neuroses suggests morphine (gr. 1/4) by hypodermic injection, or preferably an intramuscular injection of sodium phenobarbitone (gr. 1½) combined with hyoscine hydrobromide (gr. 1/100), for restless or excited patients. Immediately following the above recommendation the memorandum (*British Medical Journal*, December 16, 1939, p. 1201) continues: "It may not be possible to retain these patients for long in aid posts and smaller medical establishments, but every effort should be made to return them to their homes if they improve sufficiently to do so with safety."

The passage quoted surely does not refer to patients who have had a potent sedative administered such as morphine or hyoscine, although the sequence creates that impression. It would scarcely be advisable or possible to send a patient home within twelve hours of receiving such treatment. It would necessitate the provision of accommodation for such cases at the aid post, or, alternatively, arrangements for sending them to hospital. A diagnosis would yet remain to be made, and a further period of hours would thus have to elapse before one could be reasonably certain that retardation, varying degrees of stupor, confusion, etc., were in fact psychiatric in origin and not toxic (due to after-effects of potent hypnotic drugs). Much delay and congestion would accordingly be occasioned by their use.

The barbituric acid group of preparations, on the other hand, have much to commend them for the immediate treatment and management of restless and excited cases. Evipan and pentothal sodium have been found most useful for this purpose. Readily administered, promptly effective, rapidly eliminated, therefore short-acting, there are virtually no contra-indications, and idiosyncrasy is rarely encountered. Most practitioners can recall cases in which morphine has failed to produce the effect desired, but very few indeed have had that experience with evipan. I have only encountered resistance to the drugs of the barbituric acid group in severe cases of alcoholism and drug addiction.

The rapid intravenous injection of 5 c.cm. of evipan will produce a period of unconsciousness varying from half an hour to several hours, which is followed by a period of post-hypnotic calm. The case can be investigated psychologically during this latter phase, a diagnosis facilitated, and treatment given—for example, interpretation and suggestion. A period of unconsciousness may not be considered necessary, in which event the slow administration of the injection will induce a hypnotic state during which good contact can be made with patients who earlier were psychologically inaccessible. The intravenous route allows maximum control. The response to the drug is immediate, and if an excited patient can be calmed with a small dose then obviously an advantage is gained. Patients who have received as much as 10 c.cm. of evipan have been able to drive motor cars within three hours with perfect control. Others may take somewhat longer to recover from the effects, but it is to be anticipated from my experience that the longest recovery period after evipan would be materially less than the normal recovery period following injections of morphine and hyoscine.

Dr. Maurice Wright in the *Journal* of September 9 (p. 578) writes: "I have myself worked at a fugue case for many months in a very intelligent man of the officer class, only to find out in the end that he was a true malingerer with no loss of memory at all." This suggests a further advantage in using the barbituric acid derivatives in the treatment of war neuroses, as cases of malingering can be readily detected in one short interview on account of the inability of a person to maintain a consciously concocted account of his symptoms or a studied and rehearsed imitation of a neurosis while in a hypnotic state.

The treatment of psychiatric casualties has been the subject of much discussion since hostilities began, and the management of cases which fail to respond to the simpler therapeutic measures constitutes a problem which may become acute at any time.—I am, etc.,

London, W.1, Dec. 18. Ellis Stungo.

Black-out and Ventilation

Sir,—Dr. E. J. Thomson's letter (*Journal*, December 2, p. 1116) raises a very important subject with regard to adequate ventilation of hospitals during present black-out conditions. Some hospital authorities have installed electric fans with the object of blowing fresh air through the building, but obviously this must be rather costly. A method which I have found to be both effective and relatively cheap is to have suitable-sized fibro-plastic vents made and fixed in key positions throughout the hospital. These vents are easily fixed in place of existing glass fanlights or fitted to the top of any window in such a manner that it is still possible to open or close top of window. Normally the window would be kept in the open position. The size of the vents would depend on size of window and the amount of ventilation required.

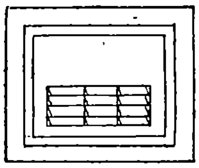
Fig. 1.
Inside.

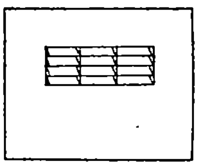
Fig. 2.
Outside.

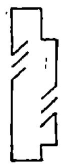
Fig. 3.
Vertical section.

The principle is simple and it is, of course, quite lightproof. Curtains are fixed below the inside vents, consequently air is free to pass into the room without any draught even in the roughest weather. The vents were designed and produced by the Sussex Plastering Co., Brighton.—I am, etc.,

V. St. George Vaughan,
Medical Superintendent, Eversfield
Chest Hospital.

St. Leonards-on-Sea, Dec. 7.

Medical Education in War Time

SIR,—Your Special Correspondent (*Journal,* December 9, p. 1155) is apparently unaware of the work being done at the West London Hospital Medical School. For the information of any of your readers who may share your contributor's ignorance I should be glad if you would allow me to state briefly the present position here.

We have forty-five students (thirty-four women and eleven men). All of these are working at the hospital with the exception of those attending the practical midwifery course at the West Middlesex County Hospital. While appreciating that certain advantages may accrue from a distribution of students in the sectors, as pointed out by your correspondent, I count this school fortunate in being thus able to preserve its corporate life—a not unimportant aspect of medical education. The number of beds is, of course, curtailed, but the reduction is partially compensated by a more rapid turnover of cases. All the out-patient departments, special and general, are in operation and clinical facilities are available at two adjacent L.C.C. hospitals. All the usual courses of lectures are being held.

At the time of writing we are still without our pathological department, which was closed under the Emergency Medical Service arrangements at the beginning of the war. I am hopeful, however, that this one defect in our teaching arrangements may be remedied by the New Year.—I am, etc.,

MAURICE E. SHAW,
Hammersmith, W.6, Dec. 11. Dean.

Relapses after Sulphonamide for Gonorrhoea

SIR,—I am interested in the article by Mr. A. J. Cokkinis and Dr. G. L. M. McElligott in your issue of December 2 (p. 1080).

One would think that if their somewhat depressing figures of the percentage of relapse after sulphonamide treatment approximate to the truth for the whole country the incidence of fresh cases would be steadily increasing since the introduction of the new treatment, as so many apparently cured gonococcus carriers at large among the community would be spreading the disease. That this unhappy result has not occurred must be due either to unusual self-control among the sufferers or to better experience in the number of relapses in other parts of the country. The proportion of relapses in this clinic has not been finally elucidated, as some improved methods of treatment have recently been introduced.

For the past three months an alkali (10 grains of sodium bicarbonate with each gramme of sulphapyridine) has been given throughout the treatment with a view to increasing the absorption of the drug, so that a smaller dose may be more effective. It has been found that 3 grammes daily for seven days clears up the great majority of cases and early relapses have been very infrequent. Of course the incidence of late relapses cannot as yet be estimated. Incidentally, the use of the bicarbonate appears also to have prevented gastric disturbance, which was fairly frequent before its introduction.—I am, etc.,

A. MURRAY STUART,
Medical Officer i/c,
Portsmouth, Dec. 19. V.D. Treatment Centre.

SIR,—I should like to congratulate Mr. A. J. Cokkinis and Dr. G. L. M. McElligott most sincerely on their paper in your issue of December 2, and also to state that I agree in every way with Dr. Neville Mascall's letter (December 16, p. 1204). One's experience of the increase in the defaulter rate since the institution of sulphonamide treatment would appear to be similar to that found by the early workers in the routine use of N.A.B. for syphilis—namely, that the disappearance of symptoms leads to a neglect of adequate treatment and observation and to a false sense of security. I concur also with Dr. Mascall's emphasis on the importance of the complement-fixation test for gonorrhoea in assessing "tests of cure." I should, however, add that in my opinion it is essential that the complement-fixation test be carried out in a laboratory where the technique of the test is in regular use, for by this means the personal factor in the reading of the test is reduced to a minimum. We have found at the London Lock Hospital that tests reported from laboratories where such work is rarely done are not dependable. The clinician must be prepared to re-examine a patient on whom the pathologist has reported a positive test, and will then be surprised to find how frequently he or she has overlooked a complication such as an early salpingitis. It is time that we clinicians realized that we may be saved from many mistakes by the habit of consulting with our colleagues the pathologists.

Although I have not yet collected sufficient data, I believe that Dr. Mascall's suspicion of the recent increase in "gonococcal carriers" will prove to be correct.—I am, etc.,

London, W.1, Dec. 18. GLADYS M. SANDES.

Personal Experience of Fractured Femur

SIR,—On August 26 of this year, while on leave in Newcastle-upon-Tyne, England, I fell a distance of about ten feet on to a stone kerb. My right great trochanter struck the edge and I felt the femur break. The pain was excruciating, but after a quarter of an hour I was able to get into the house, using two brooms as crutches. Later on in the day I was admitted into the Leazes Hospital under the care of the surgeon in charge of the orthopaedic department of the Royal Infirmary (Mr. Gordon Irwin), who, with that loyalty which medical men always show to their brothers in distress, came through from his week-end holiday in Cumberland specially to see me on Sunday, the 27th. *X*-ray examination on August 28 confirmed the diagnosis of fracture of the neck of the right femur, and on the 29th Mr. Irwin inserted a Smith-Petersen pin into the neck of the bone. Progress after operation was uninterrupted. I left hospital on September 3 (the day war broke out), was up on crutches on September 8 (eight days after operation), and sat up at table on September 9. One crutch was discarded on September 12 and the second on September 16, a stick being subsequently used to assist walking.

On September 21 I visited Edinburgh, driving a car part of the way there and back, and was examined by the consulting physician to the Colonial Office, Lieutenant-Colonel W. Glen Liston, and was passed as fit to return to duty to Nigeria after October 13. The remainder of my leave was spent in gardening (digging) to gain strength in my leg, and before leaving Newcastle for Liverpool on October 16 I walked a distance of five miles to test the leg out. *X*-ray examination showed the pin in excellent position, and Mr. Irwin passed me as fit. There was no shortening of the leg. As I had three days to wait in Liverpool before the ship sailed I visited the Royal Infirmary to see Mr. Watson Jones perform this operation. After seeing the *x*-ray films of my femur he described my result as perfect.

I resumed duty in Nigeria on November 8 and can walk well. I have no pain at all and my leg is now 95 per cent. normal—that is, just twelve weeks after operation.—I am, etc.,

Nigeria, Dec. 2. E. C. BRAITHWAITE.

Follicular Reticulosis

SIR,—The paper by Dr. Joan M. Ross in your issue of November 25, entitled "Classification of Non-infective Enlargement of Lymph Nodes," included a description of the condition known as follicular reticulosis. Noting that only about forty-five cases of the disease have been described I thought it would be of interest to your readers to know that we have such a case in the London Homoeopathic Hospital at present.

He is a man aged 47, employed by the L.C.C., who was admitted on November 29 as a possible case of Hodgkin's disease. He complained of swollen glands in the neck, armpits, and groins of about five years' duration. He also had swelling of the leg of four months' duration, with sciatic pain for two months. His previous history included trouble in the apex of the right lung when 18, which took the form of a general debility; an indefinite history of nervous indigestion; several attacks of influenza; a wrist abscess in 1923; and boils and carbuncles five years ago, after which the present trouble started. He had recently suffered from lassitude and increased nervousness. The family history revealed the possibility of tuberculosis on his mother's side, and of his three sisters one had an illness that might be tuberculous, while the other two were not robust.

On examination it was found that he had enlarged, solid, discrete, freely movable glands in the neck and axillae. The neck glands included one to the left of and just below the occipital protuberance. There were similarly enlarged glands in both groins and a mass of glands in the left iliac fossa at a higher level which were not so freely movable. These were somewhat tender and appeared to be embedded in the pelvic fascia. Abdominal examination revealed the liver to be palpable at the costal margin, while the spleen was grossly enlarged and appeared to occupy the entire epigastrium, extending down the left flank and to the umbilicus. Its edge could easily be felt on inspiration.

The patient's blood count showed a red cell count of 4,900,000; 98 per cent. haemoglobin; and 8,650 white cells, of which there were 67 per cent. polymorphs, 1 per cent. eosinophils, 1 per cent. basophils, 4 per cent. large mononuclears, and 28 per cent. lymphocytes. The blood sugar and blood sedimentation rate were within normal limits. Mantoux and Wassermann tests were negative. An *x*-ray film of the chest revealed no abnormality of the lung parenchyma and no enlargement of the hilar glands.

Biopsy of one of his left inguinal glands revealed a follicular reticulosis. The lymph nodes were seen to be hypertrophic, but there was no excessive fibrous tissue deposition. There was no evidence of Hodgkin's disease, lymphosarcoma, or tuberculous disease. Since admission the general condition of the patient has been quite good. He developed oedema of the left leg, presumably due to obstruction of the venous return by the enlarged glands, but this has now subsided. There is so far no evidence of effusion into the serous cavities. I should like to acknowledge my indebtedness to Dr. Joyce Peake and Dr. J. D. Kenyon for their permission to report this case.—I am, etc.,

London, W.C.1, Dec. 21. Ernest Hope Lamb.

Treatment of Varicose Ulcers

Sir,—I have been interested to read the various opinions about the treatment of varicose ulcers. I agree that practically all varicose ulcers can be cured by rest in bed, if the patients can afford time to stay there, but in my experience they never can—or at any rate never will. Some ambulant cases get rapidly well under elastoplast dressings; upon others it has no effect for the better at all.

I have recently, however, applied tannic acid jelly—I use tannex—the burn dressing, to these ulcers with promising results. I put a thin smear of jelly on the raw surface and allow it to dry on. This takes about an hour. Then I cover it with a light gauze dressing and an elastic webbing bandage. Patients say that the tannic acid jelly relieves them of any pain at once and is most comfortable. This only needs dressing twice a week, though the bandage is taken off at nights. Any accumulation of discharge can be gently expressed from beneath the scab daily, and healing seems to be very rapid.—I am, etc.,

Watlington, Oxford, Dec. 17. T. L. Crawhall.

The completion of the new Dental Department marks an important step in the Dental School of King's College Hospital, which, since its foundation, had had the use of one of the hospital wards. The removal of the department from this ward, contemplated some time ago, was hastened at the outbreak of war by the need to provide more beds for air raid casualties, should such an emergency arise. The new building will be primarily concerned with conservative treatment and the instruction of students. In declaring the department open Sir Frank Pearce, consulting dental surgeon to Guy's Hospital, said that although its Dental School was only opened in 1923, King's College Hospital already had a great dental tradition, begun by Sir John Tomes, whose lectures and writings had a profound effect on the practice of dentistry not only in this country but wherever dental surgery was practised: the tradition was continued by Samuel Cartwright, Ashley Gibbings, Arthur Underwood, and C. E. Wallis. The combination of medical and dental education under practically one roof, and in many cases by the same teachers, would be beneficial to future dental surgeons and was, in his opinion, no less important for future physicians and surgeons.

Obituary

PROFESSOR VON EISELSBERG

Professor Grey Turner writes from the British Postgraduate Medical School, London:

I should like to add a brief British tribute to the memory of that great surgeon Anton von Eiselsberg. I have the most vivid recollection of a visit to his clinic with the Surgical Club in April of 1912. I think what struck me more than anything else was the extraordinary contrast between conditions then and what I had seen during a previous stay in Vienna in 1899. At that time there were active surgical departments, but they were living on great traditions, and there seemed to be very little consideration for the individual patient. In the von Eiselsberg Clinic things were entirely different, for the great master was kindness itself to all those who came under his care, and had the greatest consideration for their every welfare. One instance especially remains in my memory. At that time Eiselsberg was recognized as a pioneer in the surgery of the pituitary, and he showed us some patients on whom he had operated for the removal of tumours by the nasal route. There was a most suitable case for operation in the clinic, and the patient was demonstrated to us, and we were extremely anxious to witness the operation. At the same time von Eiselsberg was most desirous to show us what he could, but as the patient was suffering from a slight cold he felt that the risk of infection would be greater than ought to be undertaken, and the operation had to be postponed until some time after our visit. I am sure that it was as great a disappointment to the professor as it was to his visitors, but he would not allow himself to be persuaded to do anything that might be detrimental to the welfare of the patient, and I shall always regard the incident as a fine example of surgical restraint. But to make amends von Eiselsberg demonstrated the steps of the operation on the cadaver. This was conducted in a sort of subterranean cellar, and I recall that we seemed to walk a very long way along devious corridors to a queer little out-of-the-way place where everything had to be done in artificial light. None the less, the conditions of the actual operation were closely followed, and he used all the special instruments which he had devised. Even on the cadaver it was a beautiful piece of workmanship.

But during our stay we saw a great deal of his operative work and many of the after-results, and were much impressed by his manifold activities over a wide field, for he was a great general surgeon. He appeared to be untiring, and with much else to see and to do in the happy care-free Vienna of those days we found it difficult to take advantage of all the opportunities with which he provided us. Clairmont, now of Zurich, was his first assistant, and I believe poor Ranzi was also on his staff, and it was delightful to notice the pride in their work shown by the professor and the opportunities he gave them for demonstrating their own methods. There was no sign of jealousy or officious superiority. But long after they left his service his assistants continued to look to him for inspiration and advice, and in turn he took an abiding interest in their welfare and activities. When I next saw him at work in 1929 he was nearly 70 and just about to retire from the chair. The war and after the war had profoundly affected him, and the buoyancy of former times was no more, but he was operating and regularly at work in the clinic, and with the same gentle solicitude for the welfare of his patients. It is only a couple of years ago since he published his autobiography under the title of *The Life Story of a Surgeon.*

Von Eiselsberg received many honours, and in 1913, at the time of the last International Medical Congress in London, he was admitted an honorary Fellow of the Royal College of Surgeons of England, and he was also an honorary Fellow of the Royal Society of Medicine and a Foreign Corresponding Member of the British Medical Association.

We regret to announce the death on December 16, at Lahore of Dr. James Cairns, C.I.E., O.B.E., chief medical and health officer to the North-Western Railway of India and honorary president of the Punjab Branch of the British Medical Association. He was the only son of the late Bailie James Cairns of Holyrood Crescent, Glasgow, and graduated M.A., M.B., Ch.B.Glas. in 1909. He obtained the D.P.H. of Cambridge in 1914 and the D.T.M. and H. of the English Conjoint Board in 1931. Dr. Cairns was acting M.O.H. for Bombay in 1919 and for some years held the post of principal medical and health officer to the G.I.P. Railway before his appointment to the North-Western Railway. He joined the Glasgow and West of Scotland Branch of the B.M.A. in 1923, was vice-president of the Punjab Branch in 1935–6, and president in 1936–7, and represented the Branch at the Belfast Annual Meeting in 1937.

Readers in Auckland (N.Z.) will learn with regret that Dr. Arthur W. T. F. Mickle died at Harrogate last month at the age of 85, after a trying illness cheerfully and patiently borne. The youngest son of the late Dr. David Mickle of Kirklington, Yorks, he belonged to the Lister era and qualified in Edinburgh with the L.R.C.S. and L.M. diplomas in 1877. He obtained the degrees M.B., C.M. of the University in Edinburgh in 1882 and proceeded M.D. in 1894. After holding house appointments at Edinburgh and Dundee he took several asylum appointments, and then for some years was in general practice in London. Finally he went to New Zealand and practised for many years in Auckland. "R. W. P." writes: Dr. Mickle loved that sunny island and its people, and must have been dearly loved in return. For family reasons he returned to England about eight years ago, when I first met him. He was so youthful in spirits and looks, so kindly, so simple in heart and tastes, and these qualities with his quiet good humour and his keen interest in medicine and travel and politics made up a singularly attractive personality and a fine old English gentleman.

The Services

DEATHS IN THE SERVICES

Deputy Surgeon General William Tait, R.N. (ret.), died at Alverstoke on December 13, aged 84. He was educated at the University of Edinburgh, where he graduated M.B., C.M. in 1878. He entered the Royal Navy soon after qualifying, attained the rank of deputy surgeon general on October 10, 1906, and retired on May 6, 1913. He served as surgeon on H.M.S. *Temeraire* during the Egyptian war of 1882, receiving the medal and the Khedive's bronze star. Later he served as medical officer of the gunboat *Lily* when she was wrecked on the coast of Labrador in 1889, and on H.M.S. *Cleopatra* in 1894, when she landed a party at Bluefields, Nicaragua, for the protection of the inhabitants during a rebellion. He was the author of *The Cruise of the Cleopatra* and of a *History of Haslar Hospital.*

Lieutenant-Colonel William Lincoln Baker, R.A.M.C. (ret.), died suddenly at Ferndown on December 9, aged 63. He was born on December 2, 1876, and was educated at St. Mary's Hospital, taking the M.R.C.S., L.R.C.P. in 1899. He entered the Royal Army Medical Corps as lieutenant on April 25, 1900, became lieutenant-colonel on December 26, 1917, and retired on April 20, 1920. He served in the South African War of 1899–1902, when he took part in operations in Cape Colony, Orange River Colony, and the Transvaal, and received the Queen's medal with three clasps and the King's medal with two clasps.

Lieutenant-Colonel Gerald Ainslie Kempthorne, D.S.O., R.A.M.C. (ret.), died suddenly, after an operation, on December 4 at St. Austell, aged 66. He was born on May 10, 1873, and was educated at the University of Cambridge, where he graduated B.A. in 1898, and at St. Thomas's Hospital, taking the M.R.C.S., L.R.C.P. in 1902, and later the D.P.H. of the London Colleges in 1913. After acting as house-surgeon at the Derbyshire Royal Infirmary he entered the Royal Army Medical Corps as lieutenant on August 31, 1903, became lieutenant-colonel on June 3, 1926, and retired on May 10, 1931. He served in the war of 1914–18, when he was twice mentioned in dispatches and received the D.S.O.

Universities and Colleges

UNIVERSITY OF OXFORD

C. Ounsted (Christ's Hospital) has been elected to a War Memorial Medical Scholarship of £100 at University College.

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated:

Final M.B.—*Part I (Surgery, Midwifery, and Gynaecology):* G. A. Ballance, E. D. Barlow, M. W. Bird, T. R. M. Bristow, P. P. Brown, B. D. Burns, J. C. K. Campbell, G. K. F. Cohen, J. G. Craddock, R. W. Danziger, R. V. Dent, W. R. B. Dickinson, J. A. Elliott, M. A. Fawkes, J. H. P. Gauvain, M. J. Greenberg, T. S. S. Gregory, M. H. K. Haggie, R. T. Hastings-James, K. M. Hay, R. C. Howard, J. H. Humphrey, R. R. Hunter, T. B. Hutton, J. D. H. Iles, R. C. Jack, J. H. Jacobs, D. W. M. James, E. E. Jones, J. Joyce, J. H. Keesey, T. A. Kemp, J. D. Kidd, H. P. König, J. A. N. Lock, B. C. H. Luker, G. T. B. MacKinnell-Childs, W. B. D. Maile, J. E. M. Melville, R. S. Monro, R. Morton, T. L. Oliver, A. Ponder, A. G. Porter, W. L. Price, J. M. Pullan, H. Rabinowitz, J. F. Roberts, D. Scott, J. F. Smith, N. Southwell, G. E. Spear, P. N. Stanbury, G. E. Stein, R. E. Symes-Thompson, J. R. Tasker, A. C. Thackray, C. C. Thomas, G. T. G. Thomas, P. D. Trevor Roper, H. D. S. Vellacott, F. A. Whitlock, H. H. Wolff, M. W. W. Wood. *Women:* J. J. H. Beattie, M. K. Cole, M. C. Simpson.

UNIVERSITY OF LONDON

At a meeting of the Senate, held on December 20, the William Julius Mickle Fellowship for 1940 was awarded to F. G. Young, D.Sc., Ph.D., and the degree of D.Sc. was conferred on T. C. Angus, a recognized teacher at the London School of Hygiene and Tropical Medicine.

UNIVERSITY OF MANCHESTER

The following candidates have been approved at the examination indicated:

Final M.B., Ch.B.—Peggy Anderson, A. P. Bates, D. Bolchower, R. Cocker, Barbara H. Fiddian, P. Haslam, J. E. Horrocks, E. Lee, D. Livshin, A. Manch, A. S. Ogden, J. C. Ramsden, J. C. A. Renshaw, G. G. Robertson, W. P. Sweetnam, H. E. Thackray. *Part I:* Eva Abrahamson, I. C. Campbell, A. C. C. Davey, Elisabeth J. Davy, I. Dickson, W. Dickson, H. Diggles, J. W. Emerson, G. R. Ferguson, L. A. Gifford, B. L. Hoffmann, E. W. Jones, F. T. Jones, G. Lancaster, F. L. R. Makin, A. Manch, H. Walmsley, Mary J. Walmsley, C. S. Williams.

Third M.B., Ch.B.—*Pathology and Bacteriology:* E. P. Abson, R. G. Balf, J. Ball, J. K. Brown, D. M. Coates, B. O. Dowdell, Jeanne M. Edwards, E. Feinmann, A. Glass, J. C. Greenwood, P. G. Griffiths, *E. G. Hall, *Frances A. Hepburn, S. H. Jackson, R. P. Jepson, J. D. Johnson, H. Khazam, M. Levinson, N. A. Lewtas, D. C. Little, J. K. McMyn, F. S. Mooney, A. B. Morrison, T. E. Parry, S. S. Rose, Susanne M. Seligsohn, G. J. Shanklin, H. G. B. Slack, J. Thompson, D. H. M. Titcombe, Vera Waine, F. R. Wilde, L. Wise, B. Wolman, P. B. Woolley. *Pharmacology:* G. Ashe, A. N. Ashworth, Shirley G. Barrett, H. Bolton, D. M. Brierley, W. E. Broughton, P. Cliff, J. G. Coburn, J. A. L. Cooper, D. G. Crawshaw, Betty J. Dakin, Sheila Egan, D. Eglin, C. J. L. Elsdon, Nora F. M. Falk, S. Falk, A. I. Goodman, S. Grace, K. Heap, Mary W. P. Huddart, Esther Jackson, H. Lempert, R. L. Lunt, Elspeth M. McKechnie, C. W. Marsden, R. W. T. Mason, Eileen T. Sloane, H. F. Smith, *S. W. Stanbury, O. C. Sugden, D. Sutton, M. Swerdlow, R. H. Townshend, H. C. Warrington, J. Whewell, J. K. Wright.

* With distinction.

NATIONAL UNIVERSITY OF IRELAND

University College, Cork

The following candidates have been approved at the examinations indicated:

M.Ch.—W. F. Whelton.

M.B., B.Ch., B.A.O.—*J. B. Kearney, *P. J. Pugh, M. Bennett, M. A. Carroll, T. F. Coleman, J. J. Hennessy, J. P. Kenefick, T. McCracken, J. B. McKenna, Kathleen M. McSwiney, Anne M. Madden, J. J. Mockler, P. J. Murphy, W. P. Navin, Mary L. Neville, D. J. O'Callaghan, Nora T. U. O'Callaghan, J. S. O'Dwyer, W. P. O'Neill, D. P. F. O'Sullivan, J. V. O'Sullivan, J. A. A. Ryan. *Part II:* Winifred P. Fielding, W. P. Lee, T. Nunan, I. Tully.

D.P.H.—*Part I:* D. C. Lawton.

* With first-class honours.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the Royal College of Surgeons of Edinburgh held on December 18, with Dr. H. M. Traquair, President, in the chair, the following candidates, having passed the requisite examinations, were admitted Fellows:

Y. M. E. R. Abeyesundere, T. J. Brownlee, H. Cohen, K. Das, B. K. Das Gupta, J. Dickie, A. A. Douglas, M. P. Embrey, D. Engel, M. R. Ewing, W. L. Fulthorpe, W, C. Gledhill, W. Gray, R. F. H. Hinrichsen, H. G. W. Hoare, Sa'd. Khalil, A. G. R. Lowdon, Rosamund M. J. Mackay, A. Y. Mason, W. Michie, A. C. Miller, N. M. Mody, G. H. Moore, A. Naylor, P. G. Rau, F. H. Robarts, T. F. Rose, F. J. Rutter, C. G. Scorer, J. F. Sheehan, H. A. Thomas, R. N. Traquair, L. J. Woodland.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—E. J. S. Barthorpe, E. Batley, P. S. Clarke, S. J. P. Ras, E. A. Spouse.

MEDICINE.—D. S. Foster, E. G. F. Skinner.

FORENSIC MEDICINE.—D. S. Foster, E. G. F. Skinner.

MIDWIFERY.—R. S. Holtan, C. M. Isherwood, J. Marks.

The diploma of the Society has been granted to E. J. S. Barthorpe, E. A. Spouse, and E. G. F. Skinner.

Medical News

The council of Epsom College will shortly proceed to elect two or more St. Anne's scholars. Candidates must be fully 9 years of age and must be orphan daughters of medical men who have been in independent practice in England or Wales for not less than five years. The value of each scholarship is dependent upon the means of the applicant and the locality and fees of the school selected. Forms of application for the vacant scholarships can be obtained from the secretary at the secretary's office, Epsom College, Epsom, Surrey, and must be completed and returned by January 20, 1940, at latest.

No. 1 of Volume XI of the *Index to the Literature of Food Investigation* is published on behalf of the Department of Scientific and Industrial Research by H.M. Stationery Office at 4s. 6d. This issue deals with papers received between January 1 and December 31, 1939. Henceforth each annual volume will appear in four quarterly numbers.

The issue of *Schweizerische medizinische Wochenschrift* for October 28 is dedicated to Dr. Alfred Vogt, professor of ophthalmology at Zurich and founder of the Swiss Ophthalmological Society, on the occasion of his sixtieth birthday.

The forty-fifth volume of *Uppsala Läkareförenings Förhandlingar* is a *Festschrift* dedicated to Dr. Gustaf Fr. Göthlin, professor of physiology at Uppsala. Of the twenty-nine articles nine are in English and twenty in German.

Dr. Jörgen N. Schaumann, chief physician to the St. Görans Finsen Institute, Stockholm, is to be the recipient of a jubilee number of the *Acta Medica Scandinavica* on the occasion of his sixtieth birthday. His name has been given to a generalized disease of which the skin manifestations are lupus pernio (Besnier) and Boeck's sarcoid.

The thirteenth annual report of the "UFAW" (the Universities Federation for Animal Welfare) has been circulated to members; for reasons of economy it has been drastically reduced in size. Much of the work connected with expansion is hindered by the war, but many activities will be carried on. Sir Peter Chalmers Mitchell, D.Sc., F.R.S., has become president, in succession to the late Sir Frederick Hobday. In March last the offices of the Federation were moved to Gordon House, Gordon Square, W.C.1.

In 1938 New York had the lowest general mortality on record—namely, 10.8 per thousand inhabitants.

An academy of dermatology has recently been founded in New York, with Dr. Howard Fox of New York as president.

The King has granted authority to Dr. Leigh Hunt Henderson to wear the Insignia of Officer of the Order of the Nile conferred upon him by the King of Egypt in recognition of valuable services rendered by him in the employment of the Sudan Government.

A library devoted to the history of medicine has been established at Yale University School of Medicine. Its basis will be formed by the collections of the late Dr. Harvey Cushing and of Dr. John F. Fulton, professor of physiology in the Yale Faculty.

The King of the Belgians has raised Professor Corneille Heymans, the Nobel prizeman, to the rank of Commander of the Order of Leopold.

Queen Elizabeth of Belgium has been made a doctor *honoris causa* of the Medical Faculty of Montpellier.

Announcement is made of the admission by Dr. Barnardo's Homes of the 124,000th child to benefit under their Charter—"No destitute child ever refused admission." The family always numbers about 8,250 boys and girls—a figure that in the near future seems likely to be exceeded by reason of war conditions.

The German Medical Society of New York has had its name changed to the Rudolf Virchow Medical Society of the City of New York.

An Argentine Society of Social Medicine has recently been founded at Buenos Aires.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

Measles and typhoid fever are the only two important infectious diseases in England and Wales which have increased in prevalence during the week; in the former London has shared to some extent but not in the latter. The expected measles epidemic has been rather slower to appear than usual, but in recent years it has been observed that the biennial epidemics do not enter upon the explosive phase until the latter part of January, reaching the maximum in March, in London in the third week. So far the disease has been widely distributed over England and Wales, affecting rural areas as much as urban centres and avoiding the majority of large towns, including London. Notifications of enteric fever rose from 13 to 29; from eight counties more than one case was reported: Dorset 2 (both in Weymouth and Melcombe Regis M.B.); Hertford 3 (Barnet, St. Albans, and Hemel Hempstead 1 each); Lancaster 3 (Preston, Colne M.B., and Trawden U.D. 1 each); Norfolk 2 (Great Yarmouth 1, Blofield and Flegg R.D. 1); Northumberland 2 (Morpeth 1, Whitley and Monkseaton 1); Nottingham 2 (both in Sutton-in-Ashfield); Warwick 2 (both in Birmingham); Yorks (West Riding) 4 (Harrogate 2, Bradford 1, Denby Dale U.D. 1).

Although the figures for diphtheria have fallen during the week and are less than two-thirds of the level of last year, reports of a disquieting character have arrived from some centres. In Leicester county there were 27 cases, of which 11 were in the City of Leicester, compared with 31 and 13 respectively in the previous week—apparently a highly virulent strain, probably a starch-permeating or "gravis" type, as the response to serum treatment has frequently been unsatisfactory. Despite an intensive immunization campaign for nearly two years in South Shields cases continue, although usually they are mild or are in carriers. Up to December 9 there have been 476 cases in the town this year, making slightly over 100 fewer for the same period last year. In the Don Valley, in the administrative county of Yorks (West Riding), a severe type has appeared, especially in two districts—Ardwick-le-Street and Armthorpe—and 63 cases have recently been admitted to Conisborough Isolation Hospital, of which 4 patients died. In Sheffield there were 18 cases during the week, compared with 6 in Leeds.

No. 49

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended December 9, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns n Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	27	4	6	1	2	25	1	13	2	2
Deaths		1	—				—	3		
Diphtheria	994	22	227	46	34	1,512	167	262	67	28
Deaths	26	3	11	3	1	26	—	7	4	—
Dysentery	50	3	28	—	—	44	6	20	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	2	—	1	—	—	2	—	—	—	—
Deaths		—	1				—	—		
Enteric (typhoid and paratyphoid) fever	29	1	5	10	1	24	5	1	10	—
Deaths	1	—	—	—	—	1	—	—	—	—
Erysipelas			58	12	7			85	7	5
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years										
Deaths	29	3	7	7	2	36	15	16	10	1
Measles	2,225	20	11		47		10	11		1
Deaths	—	—	—	2	—	—	—	—	—	—
Ophthalmia neonatorum	86	8	24		—	77	9	17		1
Deaths										
Pneumonia, influenzal*	440	18	12	1	8	794	94	19	11	28
Deaths (from influenza)	23	3	—	—	2	26	—	7	1	2
Pneumonia, primary			146	17				368	9	
Deaths		9		8	6		11		24	10
Polio-encephalitis, acute	2	—				3	—			
Deaths		—					—			
Poliomyelitis, acute	4	1	—	—	—	27	2	1	—	—
Deaths		1	—				—	—		
Puerperal fever	2	2	11	2	1	3	3	18	2	1
Deaths		1†					—			
Puerperal pyrexia	128	4	16		—	163	18	21		—
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,233	37	179	45	102	1,943	166	347	49	73
Deaths	2	—	—	—	—	4	—	2	1	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,189	19	27		4		193	343		10
Deaths	2	—	—	—	1	10	1	3	—	—
Deaths (0-1 year)	290	42	48	34	8	299	64	74	30	19
Infant mortality rate (per 1,000 live births)						49	52			
Deaths (excluding stillbirths)	4,584	712	657	179	134	4,681	852	672	213	176
Annual death rate (per 1,000 persons living)			13.3	12.0	11.8	11.5	10.9	13.7	14.4	15.6
Live births	4,764	627	797	251	237	6,044	1,101	816	359	232
Annual rate per 1,000 persons living			16.1	16.9	20.8	14.9	14.0	16.6	24.3	20.6
Stillbirths	256	28	37			253	34			
Rate per 1,000 total births (including stillborn)			44			40	30			

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* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Death from puerperal sepsis.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

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EDITOR OF THE *BRITISH MEDICAL JOURNAL, Aitiology Westcent, London.*

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QUERIES AND ANSWERS

Erythema of Eyelids

Dr. I. **Inman** (Portsmouth) writes: Dr. W. A. Muir (December 16, p. 1214) gives scanty details for a long-range diagnosis upon which scientific treatment might be based, but may I make a suggestion? His treatment with antiseptics points to a belief that infection may be the cause. I invite his consideration of the possibility of a non-infective erythema due to vasomotor disturbance. The condition might then be compared with pathological blushing. If Dr. Muir will refer to the *Journal* of August 19 (p. 396) he will find an article by Mr. T. G. Wynne Parry on ocular reaction to foreign protein which may help him to understand how complicated the mechanism can be. It describes how a young woman developed serious eye disease (irido-cyclitis) usually attributed to septic processes from merely touching egg. The question how the egg operates is not discussed, but, since it is impossible to believe that absorption took place through the skin, the only channel through which it could act was the mind, through association of ideas. I dealt with this aspect of Mr. Wynne Parry's case in a letter to the *Journal* of September 9 (p. 582). If Dr. Muir is interested and will communicate with me I will send him some literature on diseases of the eyelids induced in a similar way.

Dr. **Sydney Tibbles** writes: Dr. Muir might try calamine as a lotion or ointment for his patient's lids, as occasionally mercury is too stimulating. The skin of the lid is very tender, but is liable to the same complaints as that of the rest of the body. A rhubarb and magnesia mixture taken internally might help, as some cases are gastro-intestinal in origin.

Income Tax

Gifts Received from Patients

"M.D., F.R.C.S." has received numerous substantial gifts of money from patients in addition to the ordinary fees charged. Are such receipts assessable? If the authorities inquire by whom they were paid, can "M.D., F.R.C.S." plead professional privilege?

*** Various cases have been before the courts on the question of gifts (mostly in connexion with Schedule E), and the view is that each case must be considered on its own merits to decide whether the payments were made for personal or professional reasons. In the latter case they would in general be regarded as assessable. The fact that in "M.D., F.R.C.S.'s" case such receipts were numerous would suggest that the motive behind them was largely to recognize financially his professional services. The question is one of fact on which the judges are the Local or Special Commissioners—and not, for instance, the inspector of taxes—and "M.D., F.R.C.S." may feel that an appeal to them is justified in view of the amount of tax involved. Professional privilege would not seem to apply, but if "M.D., F.R.C.S." is willing to include a specific gift in hi liability there would be no justification for requiring him t disclose its source.

LETTERS, NOTES, ETC.

Cod-liver Oil and Vitamin D

Mr. K. **MacLennan**, B.Sc., general manager of British Cod Liver Oil Producers (Hull) Limited, writes: I do not wish to s ungenerous in my appreciation of the gesture made by a m with Professor Drummond's scientific reputation when he admits, as he does in your issue of December 2, that so far from cod-liver oil being displaced by any other fish-liver oil it stil provides between three-quarters and five-sixths of the major supplies of this vitamin for human nutrition. But Professor Drummond must go much further than this. The table to which I first drew his attention (page 180 of his book) gives the vitamin D values of cod-liver oil as varying from 50 to 20 units of vitamin D per gramme. Both these figures are in erro to the extent of no less than 70 per cent. in relation to wh the public can possibly or readily obtain by ordinary purchas in fact, the lower limit of 50 is in error to this extent as co pared with the minimum limit, 85 D, imposed by the *Britis Pharmacopoeia* for the legal sale of medicinal cod-liver oil. T method by which Professor Drummond arrives at his drastical reduced estimate, one-quarter to one-sixth contribution by halibu oil, is somewhat obscure, but it obviously arises from the errors in his table and involves some use of the widely advertised fallacy, for which he is apparently responsible, that certain forms of fish-liver oil are some quite unverifiable number of times richer in vitamin D values than cod-liver oil. The plain truth is that, whether from the point of view of actual or potential British or world supplies or use, the amount of vitamin D from cod-liver oil is by comparison so great as to dwarf supplies from all other fish-liver oils into almost total insignificance for the needs of human or animal nutrition.

Test for Albuminuria

"**Board Examiner**" writes: Being No. 1 examiner on a medical board, whose duties include examination of the urine, I find very few men over 50 who know the salicyl-sulphonic acid test for albumin. Most of them either boil the urine or use the nitric acid test, both taking up a good deal of time in the process; whereas just one drop of the salicyl-sulphonic acid solution from a dropper bottle into the urine in a test tube, or the conical glass supplied, gives a cloudy precipitate at once if albumin is present. Of course the other tests could be made afterwards to confirm matters if in doubt. Also for sugar, if the urinometer in the same glass shows a specific gravity of 1015 or less one can give a rough guess that there is no glycosuria, omitting, of course, such cases as that of the diabetic who tried to diddle the doctor by injecting twenty-four units of insulin before coming up for examination.

Rheumatism and Climate

Dr. C. M. **Heanley** (Salisbury, Rhodesia) writes: It is gratifying to see Sir Leonard Hill writing on this subject in the *Journal* o August 5 (p. 276). Why is it that rheumatic fever with card is entirely absent from vast areas of the world which enjo particular type of climate? If we could answer this question should help us in the fight against this disease. The caus mentioned in Sir Leonard Hill's conclusions—namely, dirty, ill-ventilated houses, density of population, and bad diet—are present in superlative degree in South China, but there is no rheumatic fever with carditis. There must be some preventive factor at work. Direct experiment is needed. If the ward was heated to about 85° F. and the humidity kept fairly high, would substances which cause the heart and joint lesions run away in the sweat? 85° F. can be quite pleasant if the humidity and clothing are right.

Disclaimer

Dr. E. J. **Thomson** writes: My attention has been called to a re-hash, in a Sunday newspaper, of the letter you recently published about my light-trap (December 2, p. 1116). I should be grateful if you would make it known that this publicity is not of my seeking. I have made no communication concerning the device except to you and a few personal friends.

The illustrations to Mr. Timbrell Fisher's article on the semilunar cartilages in the *Journal* of December 9 were taken from his book *Treatment by Manipulation*, published by Messrs. H. K. Lewis and Co. Ltd. In our notice of the *Annual Review of Biochemistry* on December 16 "Volume III" was printed in error for "Volume VIII."